

THE IRON AGE

A Review of the Hardware, Iron and Machinery Trade.

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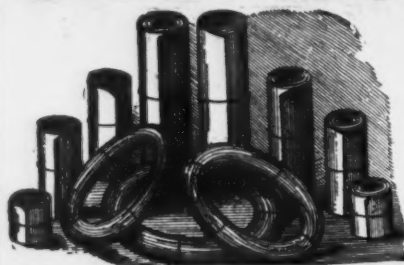
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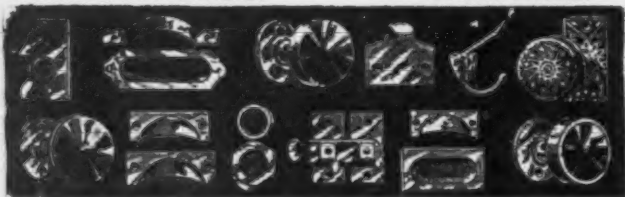
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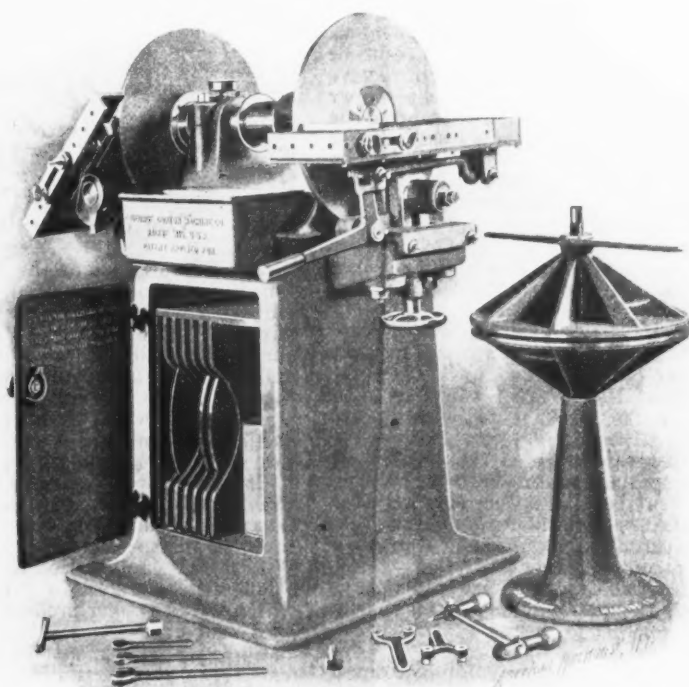
THE IRON AGE.

THURSDAY, JANUARY 26, 1899.

The Gorton Disk Surface Grinding Machine.

In general the machine here illustrated, which is built by the George Gorton Machine Company of Racine, Wis., is intended for the rapid and accurate finishing of metals, hard or soft. It will grind off rough surfaces on drop forgings, dies, &c., or do the finest kind of finishing. It will also grind faces to an accurate right angle or any intermediate angle between 45 and 90 degrees and produce parallel surfaces. The disks, being true and flat and emery cloth or paper being cemented to them by means of the press furnished, provide a true cutting surface from which accurate work must result. The high speed (1800 revolutions), and there being no grooves in the disks, cause them to cut many times faster than

of the hand lever shown, and has a steady motion at all points of its stroke, without jerk or vibration on the heaviest cuts. This lever may be released on any part of its stroke without damage to either the machine or work, and the table will remain at rest to be used if desired without sliding motion. The sliding surfaces are self oiling, dust proof and cannot be exposed when changing disks. An adjusting gib is provided in the table. The slide supporting the table has a vertical adjustment of 3 inches with screw and hand wheel, and should be firmly clamped to the supporting shoe by means of the clamping nut provided. Relieving this clamping nut will not allow dust or dirt to settle between the sliding surfaces, a heavy spring maintaining their contact.



THE GORTON DISK SURFACE GRINDING MACHINE.

a solid wheel. The emery cloth or emery paper disks are secured to both sides of steel disks with a quick drying cement used cold and requiring one-half to three-fourths of an hour to dry. Worn sheets are readily stripped from the steel disks. These tools are particularly adapted to the finishing of dies, gibs and keys, wrenches, nuts, engine straps, chuck jaws, parts of machine tools, sewing machines, electrical work, &c.

The tool is accurately made throughout. All flat surfaces on the pedestal arms for shoe bearings, shoes, vertical slides and table slides are finished by scraping to surface plates. Particular care has been taken to produce a machine dust proof in all its working parts.

The pedestal is a heavy, one-piece casting, with two projecting arms at the top supporting the working tables. This construction gives a rigid support to the tables, which are free from vibration. The head stock contains adjustable halved bearings to take up end motion of the arbor. The latter is 1½ inches in diameter and is made with end collars of steel shrunk on. The steel disks are made of flange steel and may be used either side out. The sliding table is controlled by means

The working surface of the table is 8 inches wide by 18½ inches long. Adjustment is provided in the shoe supporting the table to allow of the sliding motion being made parallel with disk face. The supporting shoe is clamped to the top of the pedestal arms by means of two studs, relieving the nuts on which allows the shoe and table to slide intact outward sufficient only to change disks. Pushing the shoe inward and tightening the nuts brings the table back to exactly its original position. The tee square is adjustable to all parts of the table top and to a right angle or parallel with the disk.

The bevel table top, shown at the left, is 12½ inches wide, 16½ inches long, provided with tee square adjustable to the entire surface, and which may be either parallel or at a right angle to the disk face. It has graduated angular adjustment through 45 degrees, also lateral adjustment for setting the top plate close to the disk. It may be firmly clamped. The vertical adjustment is 5 inches. The supporting shoe and adjustments are the same as on the sliding table. The disks are quickly changed without disturbing the angular or any other adjustment of the table.

Water Works Construction.

There is a good deal of activity in water works construction, as the following budget shows:

Director of Public Works Thompson of Philadelphia transmitted to Chairman R. R. Brinckhurst of Councils Committee a proposed ordinance authorizing the Department of Public Works to erect a new pumping station and construct five filtration plants. The ordinance submitted contemplates the appropriation of \$4,575,000 for the construction of filtration plants and their appurtenances, with a total capacity of 270,000,000 gallons daily in connection with the present water works system. Also \$2,000,000 for the construction of a new pumping station with a capacity of not less than 150,000,000 gallons and \$2,750,000 for filtering works in connection with this station. The new station is to be located on the Delaware River above Lardner's Point and within the city limits. Two of the five filtration plants will necessarily be equipped with mechanical filters, while the slow sand system will be used on the other three plants.

Director Warden of the Water Works Department of Cleveland, Ohio, has introduced in the City Council a resolution to advertise for bids for construction of a new pumping station of 100,000,000 gallons capacity. The plans call for a main structure or engine house facing Kirtland street 150 feet long, 75 feet wide and 80 feet in height. This building is to be connected to a boiler house which will be 171 feet long and 60 feet wide. In the main building it is proposed to place four pumping engines, each having a capacity of 25,000,000 gallons. In connection with the boiler plant a large coaling station is to be erected. A storage bin of 2000 tons capacity will receive the coal and supply the automatic conveying machinery which will be operated in connection with the automatic stokers. In addition to this there will be a storage tower of 4000 tons capacity, which will guard against shortage. It is estimated that the buildings, which will be commenced next spring, will cost about \$400,000.

At a meeting of the Board of Estimate and Apportionment of New York City last week it was decided to issue \$250,000 for water works extension in Brooklyn this year. This is equal to the amount allowed to Manhattan in its 1899 budget.

The contract for the construction of the water plant for the Home Water Works Company, who will supply East Hampton, N. Y., has been awarded to the Artesian Well Drilling Company of New York. Work is to be commenced at once, and the plant is to be completed May 1.

M. J. Drummond & Co. were awarded the contract for supplying the pipes and specials for the Vailsburg, N. J., Water Works, and the Rentzlar Valve Company received the contract for the valves. Eugene A. McMurray has been retained as the engineer for the work and Alexander Potter will serve as consulting engineer.

The Barr Pumping Engine Company are said to have secured the contract for the pumping engine for the Oil City, Pa., Works. The contract price was \$22,500.

The Montauk Water Company of Jamaica, N. Y., have filed plans for the erection of a water column or stand pipe. The stand pipe is to be built of steel boiler plate, and is to be 30 feet in diameter by 80 feet high. Its estimated cost is \$11,500. The work of construction is to be under the supervision of P. D. Ford, chief engineer of the Long Island Railroad Company. Jacob & Davies of Manhattan are the architects.

The report of the Water Works Committee of Rochester, N. Y., estimates the cost of extending distributing mains at \$84,906, of completing new conduit connections at reservoirs at \$60,000, the total amount asked for being \$176,352.

The State Commissioners in Lunacy have approved the plans of the Bacon Air Lift Company for supplying the hospital at King's Park, N. Y., with 1,000,000 gallons of water by means of a system of artesian wells and air compressor pumps. The cost of the plant is \$18,000.

Reports from Binghamton, N. Y., state that the contract for 16,000 feet of 6, 8 and 12 inch pipe was awarded to M. J. Drummond & Co., New York City, at \$16.55 per ton. The Donaldson Iron Company of Philadelphia were next lowest bidders, with \$16.91 per ton.

Henry R. Worthington, New York City, was awarded the contract for the 2,000,000 gallon vertical pump for Midvale, Pa. The contract price was \$4845. The Wilson-Snyder Mfg. Company of Pittsburgh were next lowest bidders, their price being \$4985.

Bids have been advertised for by the Water Board of Lestershire, N. Y., for new water works. The plans and specifications which have just been issued call for the completion of the work by April 15.

The Water Works of Meadville, Pa., have been transferred from the private corporation to the municipality for \$200,000 cash.

It is stated that City Engineer Robert Hooke of Chattanooga, Tenn., has prepared an estimate of the cost of building a new system of water works.

The City Council of Memphis, Tenn., has passed a bill authorizing the issue of \$2,000,000 for the construction or purchase of a water works plant.

Reports from Brownsville, Tenn., state that it was voted to issue \$50,000 bonds for the construction of water works, an electric light plant and public school. W. M. Crandell is Mayor.

A report from Mobile, Ala., states that ground has been broken in that city for the erection of a new water works plant.

Following are the bids which were submitted for the construction of a 48-inch riveted steel force main to the new reservoir in Highland Park, Pittsburgh. The bids were as follows: Keeling & Ridge, \$68,775; Cronin & O'Herron, \$74,000; T. A. Gillespie, \$74,940; Riter & Conley, \$81,943; James H. McQuade, \$84,663.75; James McNeill & Bro., \$82,000; Stratton & Lewis, \$83,471; W. E. Howley, \$73,697; Thomas McNally, \$106,202.35.

Sealed proposals will be received by the Home Crystal Water Company of New Albany, Ind., until January 28 for the erection of a complete water works system consisting of 23 miles of 4 to 20 inch pipe, 200 fire plugs, 124 valve boxes, boiler and pump house, suction line filter crib, &c. Plans and specifications may be seen at the office of the president, Peter Arlund, Equitable Building, Louisville, Ky., or at the office of the engineer, Frank Schefold, 1207 East Spring street, New Albany, Ind.

The Water Commissioners of Wilmington, Del., are considering the erection of a steel water tower or stand pipe of large capacity and a special pumping engine to be operated in connection with it.

It is reported that the Mayor of Sacramento, Cal., has recommended the purchase of a new 10,000,000-gallon pumping engine of the latest pattern for the Water Works Department.

The City Council of New Orleans, La., have passed an ordinance providing for extension in the water works system.

The New Rubber Combination.

The organization of the Rubber Goods Mfg. Company is now definitely announced, and the report of their incorporation—probably in New Jersey—may be looked for at any time. The amount of their capital stock may be influenced by the number of rubber manufacturing concerns embraced in the combination. As yet no authentic information is to be had concerning the constituent companies. While the number actually taken in thus far is small, no doubt options are held on several other properties.

It is understood that the new consolidation starts out with an important nucleus in the Mechanical Rubber Company—a New Jersey corporation formed in 1892 to combine a large Eastern rubber company with two in the West. This combination has since remained intact. The companies embraced in it alone manufacture nearly the whole line of rubber products except boots and shoes and hard rubber.

Since the movement for bringing the manufacturers together in a trust, the Mechanical Rubber Manufacturers' Association, organized a year or two ago to regulate prices, has held no meetings. It is held throughout the trade, however, that a sufficient advance has not been made in belting, hose and packing, considering the high price which crude rubber still commands. Meanwhile the uses of rubber are increasing. All the fire engines in New York City are to be equipped with rubber tires, and fire departments in other cities are likely to adopt a similar course. Then a set of rubber tires will be required for every automobile, and if these horseless carriages are coming into use as rapidly as is claimed, the extra demand for crude rubber for making tires may have a tendency to make this commodity scarcer for other purposes, and hence to keep up the prices of rubber goods generally.

The new rubber combination is reported as having in prospect the control to an important extent of the crude rubber market, with a view to supplying manufacturers at lower prices than now. It is contended by others that a monopoly of crude rubber is impracticable through any other course than by overbidding all the rest of the world on all the rubber coming to market—a course which, it is alleged, would hardly tend to cheapening the supplies needed by manufacturers.

Some idea of the enormous profits that have been made in Wall Street during the present boom may be gathered from the increase in the valuation of ten leading active stocks in the two weeks ended Saturday last. These stocks are Atchison, common and preferred; Manhattan, Union Pacific, common and preferred; American Sugar, common; Burlington, St. Paul, Rock Island and New York Central, and their aggregated enhancement in market value in the period named was \$67,437,141.

A New Method of Boring, Milling and Tapping Machine Frames by Use of Templates.*

BY E. CAPITAIN, FRANKFORT ON-MAIN, GERMANY.

The question of economy in the use of special tools depends not only upon the practicability, but very largely upon the amount of work available which warrants the equipment of a shop with such tools.

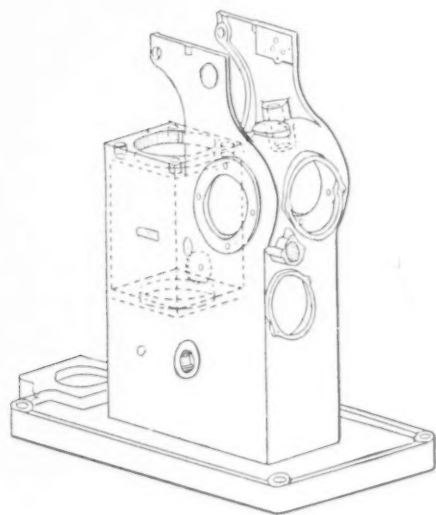


Fig. 1.—Frame.

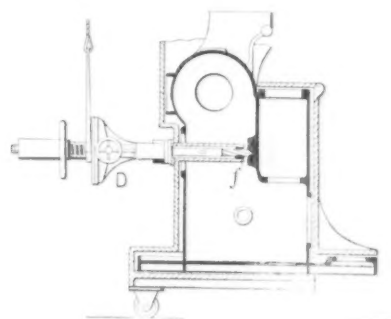


Fig. 2.—Boring or Milling.

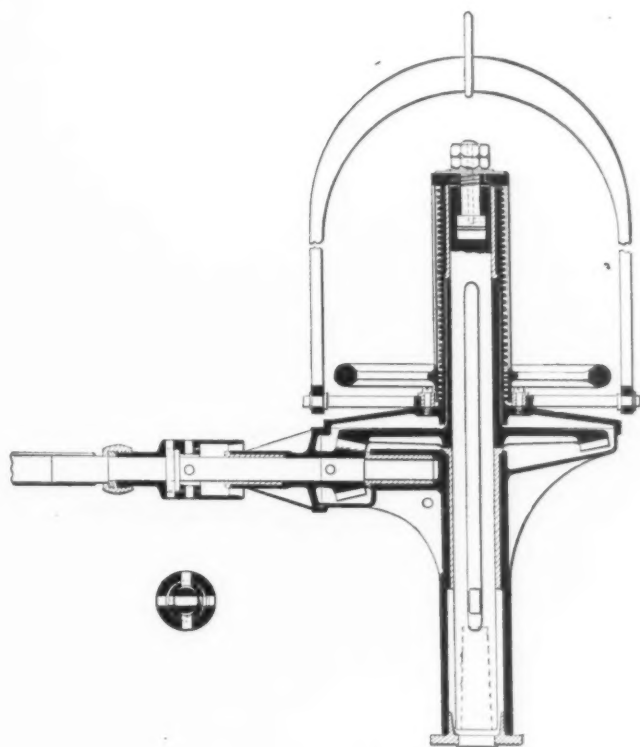


Fig. 3.

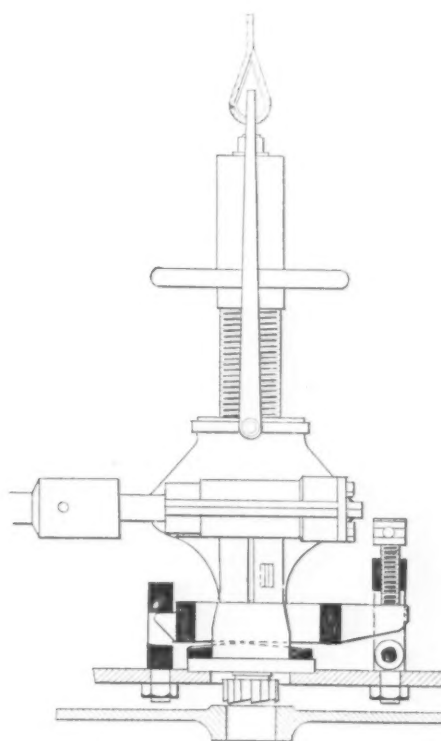


Fig. 4.

Figs. 3 and 4.—Arrangements for Boring Holes.

The number of machines of one pattern to be constructed is always more or less limited, and hence the complete equipment by special tools—as is the case in sewing machine works—is not always practicable; however, the duplication is in many cases sufficient to warrant special equipment.

While many special lathes, milling machines and grinders are available for small pieces, very little has been done in the direction of finishing large pieces. It is, of course, customary to use jigs, auxiliary tools and devices for laying out, straightening and mounting the larger parts. Large parts are bored, milled, planed and drilled on separate machine tools, requiring separate

mounting and adjustment for each operation in successive steps. The use of large special tools is not generally economical, because they are only applicable for few shapes and are frequently idle. The more expensive and limited their use the greater must be the duplication of machines to be finished on any special tool to make the latter a possibility.

The author has proposed the problem to construct several sizes of a new motor, with as extended a use of special tools as was possible. The essential part to be built was a frame, as shown in Fig. 1: a cast iron box of from 220 to 1350 pounds weight, and height of from 32 to 64 inches, with six large bored holes, 72 small holes, $\frac{1}{8}$ to $3\frac{1}{4}$ inches diameter, of which 48 had threads and 14 had finished surfaces.

The most important problem in finishing this larger and also the other but smaller frames of the motor was to so space the many holes and finish the surfaces that their relative positions would be sufficiently accurate so

as to avoid later adjustment during assembling the numerous parts forming a whole.

The usual jigs, templates, guides and boring boxes appeared to be impossible for the heavier parts, which had adjoining holes of $\frac{1}{8}$ inch and of $3\frac{1}{4}$ inches diameter, as their handling and adjustment on the boring and milling machines would be too difficult. It would be especially difficult to adjust the drill or mill to such an accurate position with relation to the part to be bored or milled that there would be no lateral straining and crowding in the customary hardened guiding bushings. The author conceived the opposite method of bringing the tools to the part to be finished, instead of *vice versa*, and to secure the boring and milling machines firmly to the jigs or templates in such manner that the tools would be in

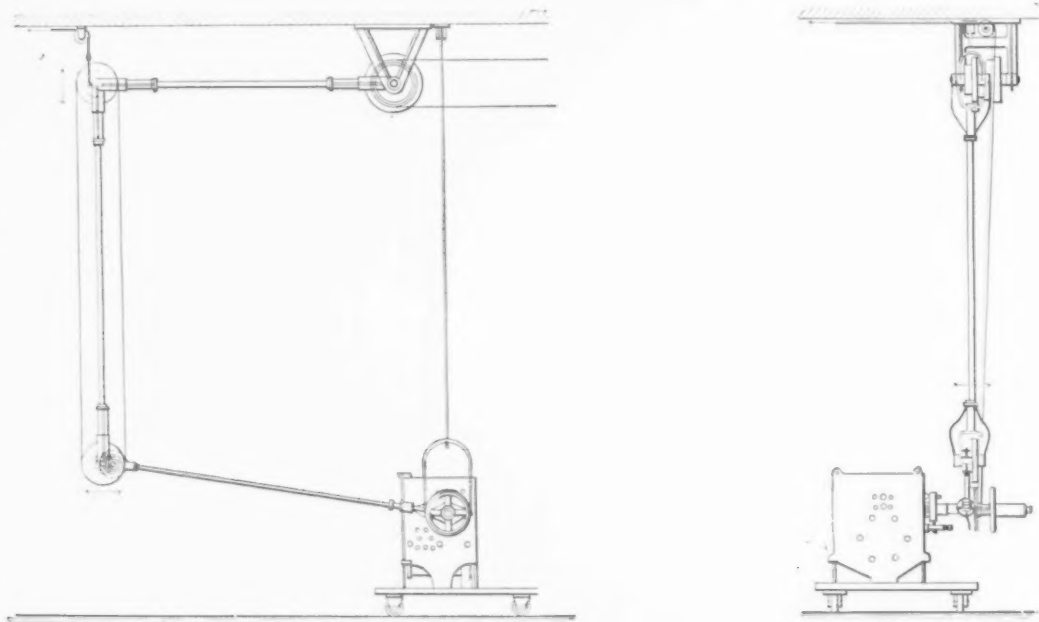
* From the *Zeitschrift des Vereins Deutscher Ingenieure*, November 12, 1898. By Gus. C. Henning.

their correct positions without further adjustment or alignment. The practical execution of this idea has given admirably satisfactory results, not only in regard to accuracy and cheapness of manufacture with use of inexperienced hands, but also with relative great economy of equipment of special tools and of replacement of larger machine tools, such as horizontal boring and milling machines, radial or ordinary boring machines.

Looking at any horizontal boring and milling machine, it will be found that the main spindle must be very heavy to prevent lateral deflection when cutting at considerable distance from the bearing. If the boring tool or milling spindle is firmly supported close to the work, as at *f*, by an interchangeable bushing, Fig. 2, then the spindle need only be of sufficient strength to resist torsion and may be made very light. Fig. 3 shows an arrangement for boring holes up to 2 $\frac{3}{8}$ inches, and Fig. 4 one to mill holes and surfaces of 4 inches in diameter, as used in the author's new method. These contrivances are not intended to replace the large horizontal boring and milling machines; they are only to limit their use in connection with jigs to work suitable for their dimensions, while radial drills and ordinary boring machines are entirely replaced. As stress on the spindle and deflection are slight, the devices may be made very light, although amply strong; the drill which bores holes 2 $\frac{3}{8}$ inches diameter and 8 inches deep weighs

sions by the described devices, but laying out and scribing becomes entirely superfluous. The sides of the box have openings, *Z*, Fig. 10, through which the location of the most important surfaces to be finished can be seen; hence the machine body or frame can be conveniently adjusted by means of screws *i, i*, Fig. 10, and thus provision for irregularities in castings is readily made. Holes *n*, Fig. 8, are milled, while the inner surfaces are milled by use of a spindle on which the cutter *S*, Fig. 9, is mounted, being firmly guided by the end support *b*, properly attached to the case *A*. To mill the opposite inner surfaces devices *C* and *b* are merely interchanged. After the principal holes and surfaces of large dimensions have been finished in case *A*, the casting is placed in a boring case, by which all other holes are drilled and tapped where desired, and all smaller surfaces are milled; the previously finished openings determining the accurate position of the casting in the boring case. In the majority of cases, where less complex castings are to be finished, the two cases may be combined in a single one.

Figs. 11 to 15 show the necessary templates for boring 70 holes, and the necessary tapping for finishing a steam cylinder of a road engine. As shown, the casting, Fig. 16, is easily adjusted in the case by means of a hinged cover, which is firmly bolted down on it. *P*, Fig. 15, are the eye bolts for securing the drilling and



Figs. 5 and 6.—Suspended Transmission.

about 110 pounds, while the milling tool for holes and surfaces up to 4 inches diameter weighs about 125 pounds. The tools are supported in a stirrup by a wire rope and counterbalance, so that they can be readily moved in any direction. They are operated not by the perishable flexible shafts, but a movable suspended transmission, Figs. 5 and 6. As shown by Fig. 5, the devices are secured to the templates by means of yokes, the bar at one end passing through a slot, the other end being tightened by means of a screw. The surfaces of the templates against which they are secured are constructed in such manner that the special tools immediately assume the desired position. Figs. 7 and 8 illustrate an ordinary triple horizontal boring and milling machine which is intended to show how a machine tool which is used for general purposes can be adapted with slight expense as a special tool. This machine must in the first place bore the large holes in the motor stand, Fig. 1, which are to take the cylinder and the crank shaft bearings, and must be truly at right angles to each other. The axis of both holes in the lower part of the frame must not only be parallel to that of the crank shaft bearings, but the inner bearing faces *r, r'*, Fig. 9, must be spaced equally distant from the medial plane of the frame and of the cylinder. As these holes and bearing surfaces are of different dimensions and are differently spaced in different sizes of motors, they would require, in order to finish all in one operation, instead of a triple drill, an apparently very complex quintuple boring machine.

By use of box *A*, Figs. 7 and 8, in which the body *B* is secured by means of screws *i, i*, it becomes not only possible to finish holes and surfaces of smaller dimen-

sions by the described devices, but laying out and scribing becomes entirely superfluous. The sides of the box have openings, *Z*, Fig. 10, through which the location of the most important surfaces to be finished can be seen; hence the machine body or frame can be conveniently adjusted by means of screws *i, i*, Fig. 10, and thus provision for irregularities in castings is readily made. Holes *n*, Fig. 8, are milled, while the inner surfaces are milled by use of a spindle on which the cutter *S*, Fig. 9, is mounted, being firmly guided by the end support *b*, properly attached to the case *A*. To mill the opposite inner surfaces devices *C* and *b* are merely interchanged. After the principal holes and surfaces of large dimensions have been finished in case *A*, the casting is placed in a boring case, by which all other holes are drilled and tapped where desired, and all smaller surfaces are milled; the previously finished openings determining the accurate position of the casting in the boring case. In the majority of cases, where less complex castings are to be finished, the two cases may be combined in a single one.

Figs. 17 to 20 show the template case for a Korting double injector body, having 18 holes. The guiding bushings are readily inserted and removed and are securely held in position by the boring device itself. The drilling and milling devices, as well as the bushings *s* and supports *P*, are equally applicable for every template case. If one of the latter should become useless or without work for some time the supports and screws and bushings are used for other templates without special difficulty; the bushings are only fixed in those cases which are to be used permanently, otherwise they are removable.

The actual cost of installation of such special devices is therefore confined to the template cases, Figs. 10 to 16, and these are provided with the requisite holes by a special drill and milling machine, which at the same time surfaces the seats for the special tools. It is evident that the applicability of the method depends upon the cost of installation, as the accurate, and uniform finish of machines is not alone sufficient to warrant the use of these devices. In order to decrease the cost as much as possible, the bushings, supports and screws are made interchangeable, and a special machine for finishing the template cases has been provided. The drilling and mill-

ing devices, with the bushings and the driving mechanism, may be considered to be relatively cheap when compared with the product of the larger machines.

For finishing less complicated machine bases or frames the machine shown by Figs. 21 to 23 is used. It consists of a stand, A, to the side of which the angle B, which revolves readily, is fastened. By means of the hand lever, Fig. 22, this angle may be placed into any desired position and clamped. The collar S again, Figs. 21 and 22, revolves in the angle B, and carries the castings to be finished. Fig. 22, for instance, shows a cylinder head in dotted lines, in position to be drilled. The drill D is mounted on table C, Fig. 22, rigidly secured to the angle block B, and is fastened by a fork (yoke), one end of which passes under lug c, thus finding a bearing point, the latter being clamped down by a screw at the center of the plate C. The casting to be drilled may be revolved with ring S, and fixed in its proper position by the dowel pin s. If it is necessary to drill a number of

and 19. In this machine it will be seen that the drill jigs are omitted, and provision is made solely for proper fastening of the casting to be finished on the ring S. Hundreds—in fact, all medium sized castings, can be drilled with this machine without previous laying out, cheaper and more accurately than in the customary manner. The mechanic needs merely to select the proper number of the holes from a table into which the bushings and dowel pins are to be fitted or to which the special devices are to be attached. These operations become easy even for unskilled laborers, and thus quickly enable them to attend the machines rapidly and safely. Interchanging the bushings and shifting of drilling and milling tools are very rapid, especially because the latter are counterbalanced.

The Water Department of the city of Boston invites proposals for furnishing to the city of Boston, Mass., 5500

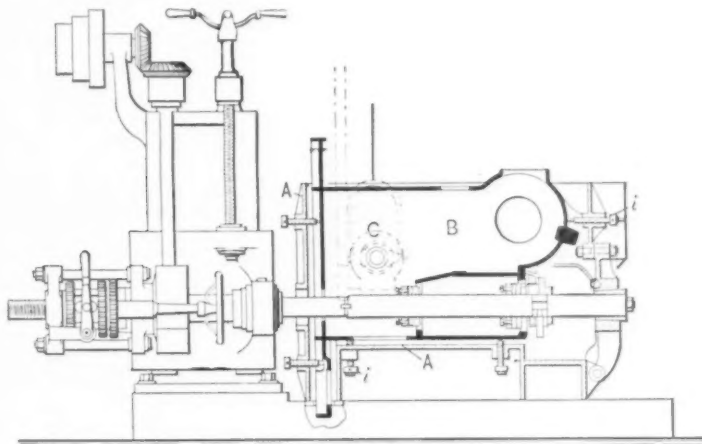


Fig. 7.

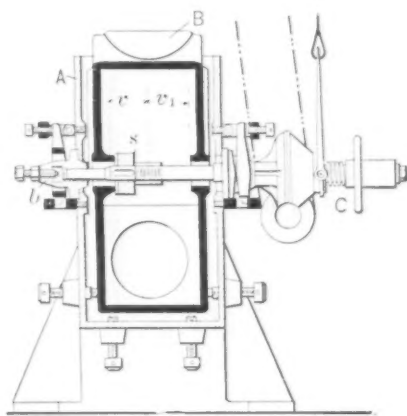


Fig. 8.

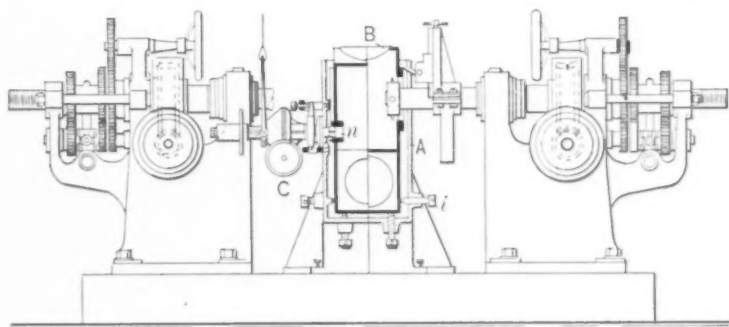


Fig. 9.

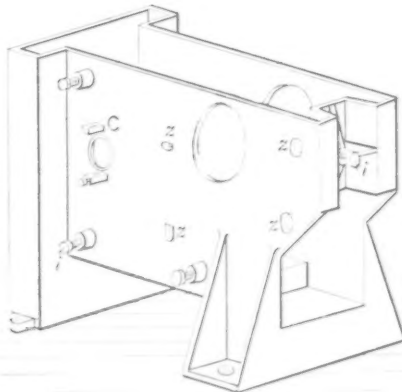


Fig. 10.

Figs. 7, 8 and 9.—Converting a Boring or Milling Machine into a Special Tool.

holes, as in the cylinder head, which shall be equidistant from a central point—the center of plate C and ring S—it will not be necessary to change the position of the drill; it, in fact, remains in its position, and it is only necessary to revolve the head with the ring S and to put the dowel pin into the proper hole on the edge of the ring, which corresponds to the proper location of the hole in the casting.

From 50 to 200 holes, according to size, may be provided in the plate C at different distances from the center, thus making it possible to drill holes at any desired distance from the center. The interchangeable bushings permit the use of most widely varying sizes of drills and taps, and the radial holes in the ring S provided for the dowel pin s, and marked with figures on the outer surface, provide for any desired spacing of holes to be drilled. In order that holes can be drilled and tapped and smaller surfaces be milled on the opposite side and laterally, the rectangular angle block T, Figs. 21 and 22, is provided for the devices D, which is rigidly secured by a screw movable in the grooves of the angle block B. The particular position of block T required on block B is fixed by dowel pins, which are put into numbered holes in B. Block T carries the devices D by means of a yoke and bolts, as in Figs. 14, 17

tons of cast iron water pipes. A bond of \$20,000, with satisfactory surety for faithfully doing the work, will be required. The office copy of the contract may be seen at the office of the Water Commissioner, City Hall, Boston, Mass. The proposal to be used can be obtained at said office and must be filled out and signed as directed therein, inclosed in an envelope and, with a certified check for \$1000, payable to the city of Boston, left at said office before 12 o'clock m. of Wednesday, January 25, 1899. This check is to be the property of the city if the bidder fails to carry out his proposal. Proposals filled out and left with check as above directed, and no other, will, at the above named hour and place, be publicly opened and read, and the undersigned reserves the right to reject any and all proposals, or to accept the proposal he deems best for the city. Said envelope should be indorsed, "Proposal for Cast Iron Water Pipe."

A London cable dispatch announces the formation of a Franco-Belgian syndicate, with a capital of \$4,000,000, established with the view of purchasing platinum mines in Russia. The syndicate, which is headed by Baron Oppenheim, the wealthy Parisian banker, aims to establish the central market for platinum at Paris instead of London.

The Use of Gas Engines for Dynamo Driving.

BY JOHN C. KELLEY.

I have often been asked why it is that gas, gasoline and oil engines are more largely used in England than in this country. For this condition of affairs various reasons may be given, the most obvious, perhaps, being that illuminating gas of, say, 700 heat units value costs about twice as much here as in England. For example, in Manchester, England, such gas costs about 60 cents per 1000 cubic feet, while in New York City the present rate is

feet, and to make graded prices for gas used for power purposes in gas engines, so that they will be for engines up to 100 horse power 1 1-5 cents per horse power hour; in gas engines from 100 to 200 horse-power, 1 1-10 cents per horse-power hour, and in engines of 200 horse-power and upward, 1 cent per horse-power hour. These prices, which are understood to take effect early in the spring when the Massachusetts Pipe Line Gas Company will have completed their immense plant at Everett and will supply by contract coal gas of 18-candle power to the Brookline Company, will at once place gas engines according to size on an equality with steam engines using 5 to 6 pounds of coal per horse-power hour, which fairly

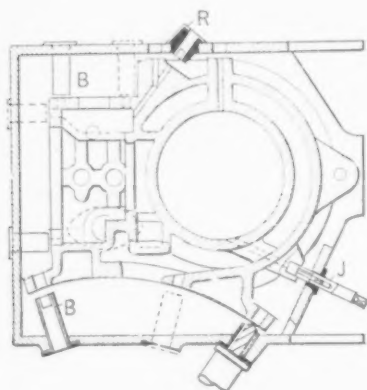


Fig. 11.

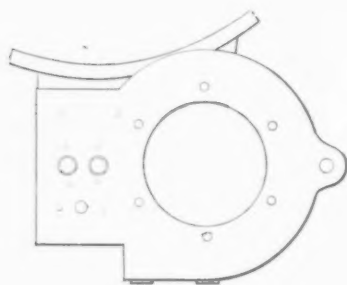


Fig. 13.

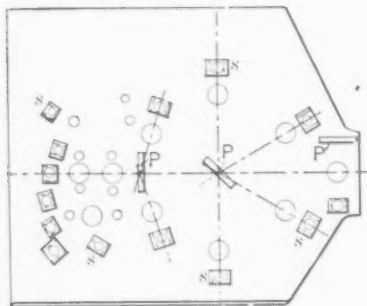


Fig. 15.

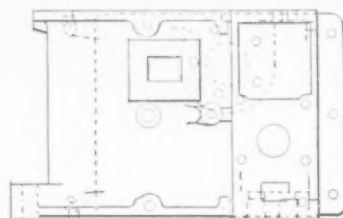


Fig. 12.

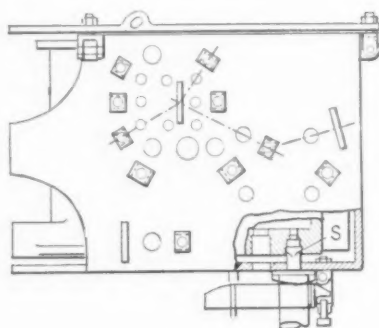


Fig. 14.

Figs. 11 to 15 — Templates for Boring Road Engine Cylinder.

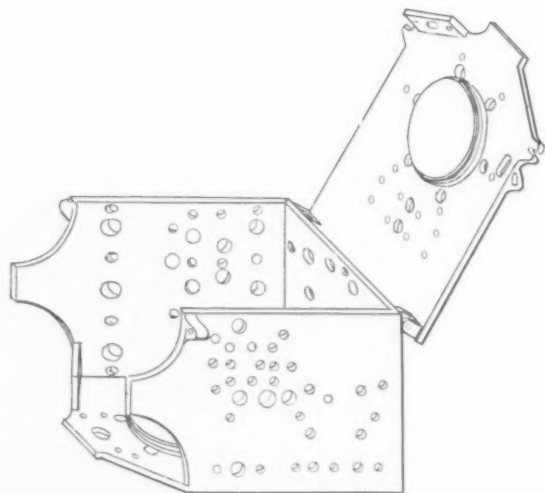


Fig. 16.—Casting.

\$1.15 per 1000 cubic feet. The result is that when any comparison of cost per horse-power per hour is made with an economical type of steam engine the figure, 2 cents per horse-power hour, obtained with a gas engine of good design, is much less favorable to the gas engine than its thermic efficiency entitles it to be for engines larger than, say, 40 or 50 horse power.

If, however, the rates for gas were to be reduced 50 per cent., as I believe might be done when used in large quantities for fuel purposes, the gas engine, even in small sizes, would give power at a cost of 1 cent per horse-power hour, and thus compare very favorably with the steam engine and give a wonderful impetus to the gas engine business.

In this connection I might say that in Boston it has recently (October 29, 1898) been arranged by the Brookline Gas Light Company with the city of Boston to reduce the price of gas for fuel purposes to 75 cents per 1000 cubic

represents the coal consumption usually met with in steam engines of moderate size working under variable load.

In England not only is illuminating gas lower in price, but there is a much more general use made of producer gas to operate gas engines, even for powers as small as 20 horse-power for factory and other service. Nothing corresponding to this is done here, except that for large powers, say 100 horse-power and upward, a few gas producers are being installed for power stations and like service. Such engines compete in economy with our highest grades of steam engines.

But though progress is still slow, such plants will be widely used when once the fact is generally appreciated in this country as it is in England that a pound of coal gives far more power when made into gas and run through a gas engine than if burned under a boiler to generate steam for a steam engine. That the cost of fuel

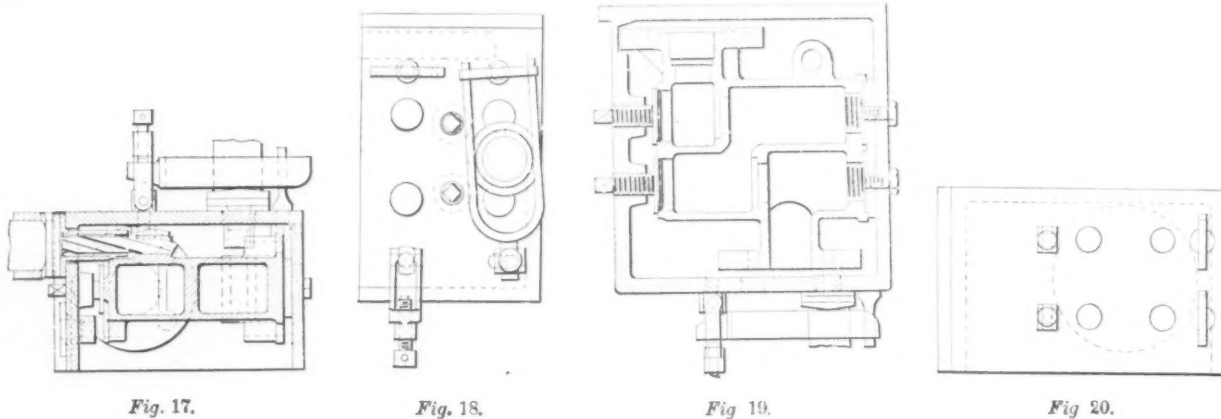
is almost a controlling factor in the question of installing gas engines is shown by the fact that the demand for large engines suited to our natural gas regions is steadily increasing.

As regards gasoline engines, improvements in the details, and particularly in the electric igniter, have placed this motor in position to compete with high grade steam engines, yielding as it does power at a cost of $\frac{3}{4}$ to 1 cent per horse-power hour. The underwriters' requirements, however, restrict the gasoline engine to localities where there is sufficient space available to place the gasoline storage tank 30 feet away from any building. But for country houses and hotels, village water works, factories or lighting stations the gasoline station seems just what the conditions demand, and there are a number of engines in use for such service, besides others to operate dynamos to charge storage batteries. The demand for gasoline engines is growing for out of town power plants,

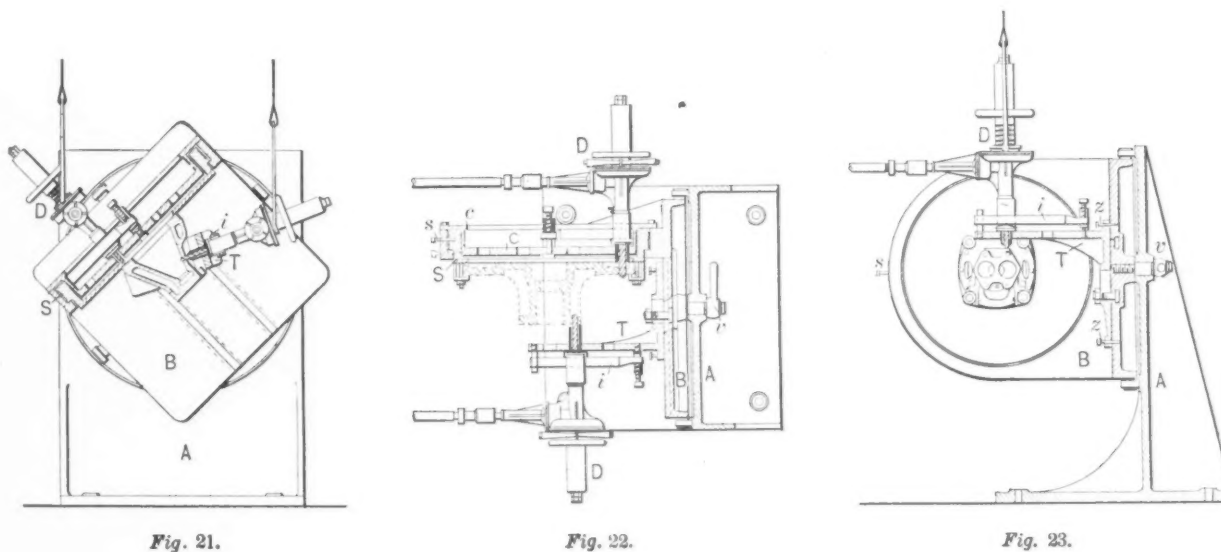
Were this item of cost based on actual charges for street current more generally known, instead of there being in New York City about ten times as many small motors as gas engines in service, the proportion might be reversed. Abroad the cost of operating is considered very carefully, and first cost in its due proportion, which may account, in part, for gas engines being used so much more largely than here.

As regards the application of gas engines to isolated electric lighting, a few instances may be cited. The direct connected plant of 500 lights capacity installed at the house of the American Society of Civil Engineers, 220 West Fifty seventh street, has been in service nearly a year and has proved satisfactory, the cost for fuel and attendance being about one-half that of street current, and the quality of light and regulation being excellent.

The two cylinder Nash engine gives two impulses on the crank shaft every two revolutions, instead of only one



Figs. 17 to 20.—Template Case for Korting Injector Body.



Figs. 21 to 23.—Machine for Finishing Bases or Frames.

especially in the larger sizes for electric lighting and factory service.

The lessened sales over former years of the small sizes of gas engines, say 5 horse-power and under, are, perhaps, due also in great measure to the competition of the electric motor. A small gas engine cannot be sold for the same price as a small motor, because it is a much more difficult and expensive machine to build. But it is found, as a rule, that those who install such machinery consider only the first cost and do not consider at all the cost of operating, which is a matter of vital importance. For example a 3 horse-power electric motor may be bought for, approximately, one-half what a first-class 3 horse-power gas engine will cost. (The motor, it may be remarked, will weigh about 450 pounds, while the gas engine weighs about 1500 pounds.) The difference in price may be, say, \$150, while the difference in cost of operating may be, as shown by actual examples, as much as \$200 to \$240 per year, or nearly enough to pay for a gas engine the first year. In fact, careful comparison of costs of operating gas engines and motors doing the same or equivalent work has shown the motor to cost from two to three times as much to operate as a gas engine.

as in the single cylinder engine, and the governor is so sensitive that it automatically regulates the speed to within 2 per cent. from full load to no load. Besides this, a special coupling, which connects the engine and dynamo, is so adjusted that it is impossible for the speed of dynamo to vary but very slightly either way from normal speed before it is corrected by the coupling and the governor acting jointly. Regulation, in fact, is so close that the voltmeter shows less than one volt variation under changing loads.

At the civil engineer's house they installed a low pressure steam heating apparatus for warming the building, while gas engines are used only for the electric lighting. Some of our steam heating engineers were disposed to question the wisdom of this arrangement as compared with a steam lighting plant and steam for heating, but the result, in this case, has justified the choice and shown the economy of departing from standard practice which has compelled the use of a steam plant, oftentimes, solely because it provided exhaust steam for heating, and because it was thought, no matter how wasteful the steam engine might be, it cost nothing for the steam heating.

The gasoline engine, particularly, which places coun-

try houses in an even more favorable position than those in the city with respect to electric lighting at a very moderate figure, I regard as especially promising. What we need just now is more intelligent appreciation, on the part of architects and owners, of what constitutes first-class gas engine machinery and willingness to pay a fair price for it. The market is flooded with cheap gas engines, as it is with cheap steam engines; but while it is recognized that the severe requirements of electric lighting have wonderfully developed the steam engine and that nothing but the very best engines will serve, it does not seem yet generally appreciated that in like manner only a high grade gas engine will answer for electric lighting. —*Electrical World.*

Business Cards.

BY CHARLES HANSEL.

The various sizes and styles of business cards make it exceedingly difficult to preserve them in a convenient form, and the consequence is that they generally find their way into the waste basket in a short time after being presented. It is the practice of the writer to transcribe the information contained on a business card to an ordinary blank card such as is used for filing in the cabinet of the Library Bureau Company. By doing this all addresses are easily preserved and the cards are filed under the name of the business instead of the name

tions, and will be found of great convenience in recording the visits of the representatives and quotations made at that time. If such quotations cancel any previous figures, the old card will be removed from the cabinet and destroyed, and a new card inserted in its place. We believe that a neatly printed card in this form will be of much greater value to all than the most expensive lithographed one which is not made in such a manner as to be preserved. The only catalogues which are sure to be kept and referred to are those which are made to conform to the standard size, and if the purchasing agents of the railroads and other large corporations would request all business houses with whom they deal to furnish their representatives with a card made in the manner hereinabove described, we believe that it will be but a short time before all business cards conform with this principle.

The Snoqualmie Falls Power Plant.

Advices from Seattle, Wash., regarding the important electric power plant now under construction at the Snoqualmie Falls, are as follows: February 22 will witness the completion of one of the most remarkable hydro-electric projects in the annals of American engineering—the harnessing and transmission electrically of the water power of the famous Snoqualmie Falls cataract (height, 268 feet) to the industrial centers of Puget Sound. The hydraulic works and the 30-mile aluminum transmission lines have been completed, and the electric ma-

SIGNALS, INTERLOCKING & SWITCHES.

FORM 140.

The Union Switch & Signal Co.

OWNERS OF

THE NATIONAL SWITCH & SIGNAL CO.,

THE JOHNSON RAILROAD SIGNAL CO.

CHARLES HANSEL, C. E.,

43 CEDAR STREET,

MANAGER

DEPARTMENT OF SALES
AND INSTALLATION.



Fig. 1.

NEW YORK.

of the firm or individual presenting the card. This transferring of the record from the original card to the card in the filing cabinet would be avoided if a uniform size and style of business card was adopted, and it would appear that it would be of interest to all concerned if this could be accomplished.

The size of the standard card for filing in the cabinet mentioned is 3 x 5 inches, which is sufficiently large to permit all necessary matter to be printed thereon. The sample card, Fig. 1, shows the face of a plain business card with hole punched in proper place. The first line or heading denotes the business of the company offering the card, and this is placed as an index for filing, and with this system all cards would be filed under the title of the business or the article manufactured. This is done to secure a system of filing which will at all times furnish the information desired. As an example: There are a number of makers of car wheels. If the card were filed under the name of the individual presenting it or the title of the manufacturer, the person seeking information from the card must remember at all times either the name of the individual or the manufacturer, whereas if these cards were filed under the name "Car Wheels," as indicated on the upper left hand corner of the card, they would all be together in the file, and no effort of memory would be required. In this manner the names of the various supplies necessary to be purchased would be together in alphabetical order, and if it was desired to have a card under the name of the individual or the manufacturer, a separate drawer in cabinet could be used.

Each drawer will hold about 800 cards, and with this system we have a complete index of all firms manufacturing the various supplies, which is especially desirable for purchasing agents. This cabinet will occupy a space of not more than 6½ x 13½ inches on the desk.

The backs of the cards may be used for noting quota-

tionary from the Westinghouse Company is now assembling. The service will be over two separate pole lines carrying four independent 25,000 volt circuits to insure uninterrupted service, and will be adapted to 2000 volts for service to the electric lighting systems and factories, 500 volts for the street railways and small motors, and other voltages as may be required mechanically or chemically. Six thousand horse-power, in 1500 horse-power units, is the initial capacity of the plant which will be available on the above date from the company's power stations in Seattle, Gilman, Renton and Snoqualmie.

The New British Naval Gun.

The new type of 12-inch naval gun lately introduced by the British Admiralty for the Royal Navy, possesses material advantages over the existing ordnance of the same caliber. Experiments have shown that a charge of 167½ pounds of cordite is sufficient to fire a projectile 850 pounds in weight a distance of 10,000 yards, whereas the existing 12-inch gun needs a charge of 295 pounds of powder to fire a projectile weighing 714 pounds the same distance. The new gun has also a greater destructive capacity, it having been found that its projectile will penetrate 21.1 inches of wrought iron at a distance of 1700 yards, while the penetrating power of the ordinary 12-inch gun at the same distance is 19.4 inches. At shorter distances the destructive capacity is much more pronounced, the muzzle perforation of the new gun being 38.5 inches of iron, as against 26.7 inches in the case of the older type of weapon.

The German Emperor has approved the plans for the projected Prussian ship canal between Stettin and Berlin, by means of which vessels of heavy tonnage will be able to load and discharge cargoes direct at Berlin.

Whirlpool Power.

A plan to utilize 5 per cent. of the waters of the whirlpool rapids at Niagara and convert it into 35,000 electrical horse power on an outlay of nearly \$2,000,000, has just been completed by John Birkinbine, a prominent Philadelphia engineer and president of the Franklin Institute, for a party of New York and Buffalo capitalists. The main idea of the scheme is to utilize the 45 feet head of water between the international bridges and the whirlpool by conducting the percentage of water named through a canal along the base of the gorge and inside the tracks of the Niagara & Lewiston Railroad, known as the George Road, so as not to interfere with the scenery in any way. The power house is to be located just around the bend of the river below the whirlpool.

In speaking of the project Mr. Birkinbine said to a reporter of the *Philadelphia Evening Bulletin*: The average flow of water through the gorge is from 166,000 to 275,000 cubic feet per second. The speed of the water rushing down the gorge is 21.75 miles per hour—that is, from the bridges to the whirlpool.

The new project is as follows: First to divert a portion of the water from the river below the bridges into a canal separated from the stream by an embankment or wall, which will also carry the roadbed of the Niagara Falls & Lewiston Railway. Owing to the velocity of the river, it is proposed to construct an entrance which will practically be a monolith of concrete or mass of masonry,

of passing through valuable property necessary in the other plants. The plans, which are now in the hands of the promoters of the project, who express confidence in their ability to carry it through, provide for the rise and fall of the water in the river due to the variations of winds on Lake Erie. The maximum variation is about 15 feet.

Wrought Iron Grille.

The Ludlow-Saylor Wire Company, St. Louis, have been very busy during the past six months in their manufacturing department. During this time they have turned out some very handsome and artistic pieces of work in the shape of elevator cars and inclosures, park and cemetery gates, vault doors, &c. We illustrate herewith a grille made by this company, which measures 9 x 3 feet. It is made of hand hammered wrought iron and leaf work, and is considered a very artistic piece of work. The company are prepared to make original drawings for any class of artistic iron or brass work, and this department of their business is growing to large dimensions.

An Automobile Truck.

The first automobile truck ever made in this country has just been completed by the Fisher Equipment Com-



WROUGHT IRON GRILLE

pierced with openings, through which the water can pass into the canal.

The excavation of the canal, which will involve the removal of enormous quantities of rock and *débris*, will be conducted at a low cost by hydraulicking or washing the loose material away by strong streams of water. Most of the waste material will go into the river, but the harder and better rock, which will have to be blasted down, will be utilized in the construction of the bank for the canal, the power house and other purposes. The canal will deliver 10,500 cubic feet of water per second, or 5 per cent. of the normal volume passing through the Niagara Gorge. Making allowance for head lost in the canal and for efficiency of water wheels, this volume of water can, with the fall available, produce 35,000 electrical horsepower.

The plans admit the water about 300 feet below the bridge, from which point a fall of 45 feet to the outlet at the whirlpool is secured. The canal will be 5300 feet in length and average 100 feet in breadth.

It is proposed to equip the power house just below the head with water wheels, electric generators, exciters, &c., and to carry the railway track over a portion of the power house to allow free vent for tail water without interfering with the scenic features of the railroad.

The present price per horse power at Niagara Falls is based on a charge of \$20 per annum for one electrical horse power continuously applied, or \$12 for a dynamic horse power delivered on water wheel shafts at power house. By the proposed plant it is anticipated that we shall be able to reduce the prices per horse power considerably below the present charges. Though the cost of constructing the canal and the power installation will reach nearly \$2,000,000, it will be much less costly to build than a similar plant to develop the same number of horsepower erected to utilize the vertical drop at the falls. The plan proposed does away with deep wheel pits, long tail race tunnels, which are so costly to build, and the expense

pany of Chicago, and is now employed by the manufacturers for their own deliveries. The truck is made for heavy hauling. It weighs 9000 pounds net, and its carrying capacity is about 5 tons. The propelling power is an eight horse-power gasoline engine directly connected with a generator. The current from the generator is accumulated and governed by 44 storage battery cells, which also adjust and reduce the tension of the motors. Its maximum speed is 6 miles an hour. A speeding truck can easily be made, but no higher rate of speed was deemed necessary for delivery purposes. The truck has scaled the Twelfth street viaduct, the steepest grade in the city of Chicago, with the greatest ease, carrying a load of more than 3 tons.

A Tin Plate Plant at Peoria.—Press dispatches from Peoria, Ill., have stated that the Peoria Steel & Iron Works are making arrangements to begin the manufacture of tin plate. We are advised that the statement is somewhat premature. The manufacture of tin plate is seriously contemplated, but nothing positive has yet been decided upon.

The condition of business among the plow manufacturers is indicated by a statement just published relative to Deere & Co., Moline, Ill. Their 400 blacksmiths are working until 8 o'clock in the evening, making a 12-hour day. The fitting shop will make the same time shortly, when the blacksmiths have gained a good start; a little later the grinders fall into line on the same basis, and thus eventually all departments will be running overtime, employing an aggregate of over 1000 men. Additional buildings are now being erected to relieve the pressure by enabling a larger force to be set to work.

English and American Machine Tools.

Considerable discussion has appeared in the columns of our British contemporary, the *Engineer*, as to the relative merits of British and American machine tools. The opinions are confined mainly to standard machine tools, such as lathes, planers, shapers, drills, milling machines and the like. The automatic and special machines, as we understand them in this country, receive but little attention, their superiority being apparently conceded. In the following extracts we have endeavored as far as possible to group the criticisms under their appropriate heads. One correspondent seems to strike very near the nail when he says that the real difference between the American and British tool makers is that the former do not wait for their customers to tell them what is wanted, but show them how much more and better work can be done by the new over the old methods. Very few cases indeed can be pointed out where the British tool maker has done this. The discussion was started by Hugo Campbell of Halifax, who appears to be intimately acquainted with the design of British and American machine tools.

Milling Machines.

Hugo Campbell, Halifax, says: "What about milling machines? It was undoubtedly the Americans who showed us what the milling cutter could do, and any one unprejudiced will undoubtedly confirm my belief, that not only in small milling machines, but in large plain or slab milling machines, they stand pre-eminent. I am well aware that there are one or two firms in this country who make such large machines, but they have not had the experience in them that our cousins across the water have, and this can be seen in the designs of their various types of those machines."

Planing Machines.

The same writer remarks: "What about planing machines? The largest and best planers made in this country are made on the American Sellers principle, but even then they are not up to date in speed. There are no firms in this country to-day who can offer a good planing machine with a cutting speed of 20 feet and a quick return speed of 80 feet. These are the lowest speeds of the American planers. Further, let any one stand beside an American planer while it is at work, one can hear one's self speak; but let him stand beside a British made planer, and one has to shout, so great is the noise as compared with the American. The secret is that only cut gearing properly designed is used, and notwithstanding their quick speeds all are beautifully silent. Again, where can we buy in this country planers which give the user such a range of feeds as we find in the American? With the latter you have from $\frac{1}{32}$ up to 1 inch, and sometimes more than that. The broad feed in finishing cuts is invaluable, but you can't get it on a British planer."

Another writer says: "As regards planing machines, the cutting and returning speeds are entirely dependent on the nature of the material and the weight of the objects required to be dealt with. For instance, when planing armor plates, weighing 20 to 30 tons, would your correspondent suggest the cutting speed he mentions of 20 feet and a quick return of 80 feet per minute for such work? Surely not. As to the broad feed, Mr. Campbell, who says 'you can't get it on a British plane,' will be surprised to learn that my firm have been for nearly 20 years, and are now, constantly making planing machines with feeds varying from $\frac{1}{32}$ inch up to as much as $1\frac{1}{2}$ inches broad, and this, according to Mr. Campbell, is considerably in excess of the broadest feed obtained by the American practice, which he gives as about 1 inch."

Clifton & Waddell, machine tool makers, of Johnstone, Scotland, say: "With reference to Hugh Campbell's wholesale onslaught on British machine tool makers in your last issue, we wish to correct a rather damaging statement of his, that no firm in this country can offer a good planing machine cutting at 20 feet and reversing at 80 feet per minute. We are making a specialty of planing machines, and these speeds on a noiseless running machine are our ordinary practice. Our standard machines also embody advantages which, we have good reason to believe, are not on even the best and most expensive American planers—viz., an additional slow cutting speed of 12 feet per minute for extra hard material, and having correspondingly increased driving power, automatic lifting motion to the cutting tools during the return stroke, the total avoidance of torsional strain on main gearing shafts, and consequent spring. We might mention many other points of inter-

est in planers to show that, as regards up to date improvements, we are by no means content to take a back seat. It is evident that Mr. Campbell is not acquainted with the younger firms in the tool trade. We instance one machine only of those mentioned by him, as it most directly affects ourselves."

Sharp, Stewart & Co. (Limited) of Glasgow state: "He [Mr. Campbell] refers to the Sellers planers as made in this country—we adopted this system in 1872, and have continued to manufacture these machines up to the present time—and proceeds to criticise the speeds, gear and feeds used in this country: (1) Mr. Campbell says: 'No maker can offer 20-foot cutting speed and 80-foot return speed.' We have for many years adopted as our standard a cutting speed of 22 feet per minute with a return speed of 3 to 1—a higher ratio of return speed is merely a question of arrangement—in our opinion 3 to 1 is quite high enough, especially for heavy machines. (2) No doubt our British tool makers—at all events, the best of them—will feel complimented by Mr. Campbell's exaggerated description of the vocal effort necessary to make one's self heard when talking alongside a British made machine. Perhaps he has been unfortunate in his choice of tools. Nothing more need be said on this point, except that we are not afraid to invite Mr. Campbell to prove his assertion alongside one of our make of Sellers planers, fitted, by the way, with well made cast gear, not cut gear. (3) Mr. Campbell is speaking about broad feeds without adequate knowledge of facts. Broad finishing feeds have been made in this country for years. We, for example, have a patent of our own—Robinson and Oldfield's patent—which we constantly fit to our machines. This apparatus gives feeds varying from $\frac{1}{32}$ inch up to $1\frac{1}{4}$ inches in the smaller size of machines, and $1\frac{1}{2}$ or 2 inches in the larger sizes."

In reply Mr. Campbell says: "Can the managing director of Sharp, Stewart & Co., Limited, or 'British Tool Maker,' affirm that broad feeds are the standard practice of British made planers? It cannot be affirmed by either of these gentlemen that such is the case. 'British Tool Maker' carefully avoids the question of cutting and quick return speeds on his planing machines. Why? In return he asks me if I would recommend such speeds as I speak of for large planing machines for dealing with armor plates? No, I certainly would not. I am not so foolish. I wrote about tools suited for a general engineer's shop, and not for an armor plate factory. The managing director of Sharp, Stewart & Co. manfully states that their planes have not such quick speeds as American machines. He says that their standard cutting speed is 22 feet per minute, with a return speed of 3 to 1, and he candidly states that this is high enough for him. With due deference I beg to say that it cannot be good enough for him or any other man, especially when they can get machines to turn out splendid work, and do it at a quicker speed. I may tell Mr. Robinson that I have seen a planing machine 14 feet long by 4 feet wide by 4 feet high cut at a rate of 25 feet per minute, and with a return speed of 100 feet per minute, and this without any shock at the reversing. I certainly never expected to see a representative of Sharp, Stewart & Co. write that 66 feet was a quick enough return speed on planing machines when Americans can offer and sell the same machine to do it at a faster speed. I am aware the increased speed is only a question of arrangement. Of course it is, but this arrangement never seems to get worked out by the British tool maker."

Lathes.

The following remarks on lathes by Mr. Campbell will be read with interest: "About the ordinary sliding, surfacing and screw cutting lathes, I am not such a lover of the American machine. The feature I do not like in them is the tool rest. They are made far too weak and flimsy for heavy cuts, but our tool makers must not think that this will escape the attention of the American tool maker. The great feature they possess is that they find out themselves the weak points of their tools, and alter or adapt them to suit all requirements. The British maker is content to wait till his customer complains or kicks up a row, and then, perhaps, the next machine he makes he will alter. There are, however, many points for admiration in the American lathes. One very desirable feature is the friction back gear. Among the whole list of our tool makers I know no one who advertises friction back gear to his lathes. I am speaking, of course, of ordinary lathes, not special tools such as turret and capstan lathes. Again, any one examining an American lathe will see two projecting pieces of metal on the fast head stock below the cones. These are cast on the head stock to prevent the belt slipping into the back gear and getting chewed up, which, as any one knows, is done from time to time. These simple bits of metal are nothing in themselves, but I have not seen a British lathe possessing them. Further, there are only one or two firms in this country, and that only recently, who can offer you a lathe with several

changes of feed to the back shaft, without requiring to use change wheels. Lang's and one or two other firms are the only ones in this country who can do this. The old style was that the turner had to hunt about for his change wheels, pull off those he had on, and put on others, and perhaps he put on the wrong ones, the feed oftener being too slow than too fast. Also, where can we buy a British lathe to cut a range of different threads without the use of change wheels? I answer that there is not such a lathe made in this country. You can buy these from half a dozen American makers, all of whom make a strong point of them. Lathes with automatic stops to the feed in Britain cannot be had; they are common with our cousins.

"What about capstan and turret lathes? What firm or firms in this country except Alfred Herbert, Limited, of Coventry can show us such a line of these tools for both bar and casting work as the Americans? If some of our tool makers would either study themselves, or appoint some one with a head and brains to study, say, the Jones & Lamson, Gisholt, Bullard, and the Dreses & Mueller capstan and turret lathes, they would find what a great saving in manufacture is caused by the use of such tools, and the wide field which is open in this country for good firms to take up their manufacture."

A correspondent says: "And now to come to the ordinary turning and screw cutting lathe. Mr. Campbell tells us the feature he does not like in an American lathe is the tool rest; neither, should I imagine, does any one else, for this is certainly the weakest spot in the whole machine, and utterly inadequate for anything in the nature of heavy cutting. As to the alteration in this particular, our American friends had better hurry up, for they certainly have not made much progress in the last ten years. Again, on some of these American lathes it needs a fair mathematician to find the wheels required for cutting a thread slightly out of the common, and I have repeatedly seen a workman in consultation with the draftsman on this matter. I have a modern lathe by one of the best American makers upon which such ordinary threads as 11, 19 and 26 could not be cut. What American lathe has such a perfect device for screw cutting as the quick withdraw motion fitted to most of our British lathes? Again, I beg to inform Mr. Campbell that automatic feed stops are fitted to British lathes, and by more than one firm in this district."

Mr. Campbell's remarks on this subject are as follows: "I reply to Mr. Coventry, and tell him that I am fully aware of the capstan lathes made by his firm and Messrs. Muir's, but they are not to be compared with the Herbert or American tools. I speak with some experience; my firm have used a Smith & Coventry capstan lathe for a few years. It is a good, sound, honest machine, but is woefully behind the others in output. All British capstan lathes are alike in this respect, and will be until they make their standard patterns to have automatic revolving capstans or turrets, screwing dies to open and close automatically, have the turrets in direct line with the lathe spindle, and the lathe arranged with automatic or wire feed, so that it need not be stopped while the work is being moved along. These are a few points only in which our tool makers fail in touching the American turret lathe. My own opinion is that if any responsible person should purchase a British capstan lathe, knowing the increased capacity and production of the American machine, I should consider him to be slightly foolish."

Gear Cutters.

"Some time ago I wanted to buy an automatic gear cutter. I tried the only firm in this country who advertise themselves as makers of such; their price was not only higher than the American make, but they wanted nine months to deliver it, while their machine was inferior in design and construction to the American. The fact of the matter is, there is to-day no machine maker in Britain who makes a push of automatic gear cutters. Here, surely, is an opening for some one who is wide awake enough to take advantage of it."

A writer explains that the high price of labor in the United States is the reason automatic gear cutters are so common, and that "the reason they are not made here is that until lately all innovations were tabooed by the workmen."

Boring Mills.

Concerning boring machines Mr. Campbell says: "I recently wished to buy one or two of these machines, and asked several British makers for prices. The type which suited us best was priced at £335. I declined to pay such a price for the machine, and tried America. The result is that I am getting a better machine delivered f.o.b New York for £210, and delivered in one-fourth the time of the British tool. Further, a guarantee has been given—voluntarily on the makers' part—that this machine will bore and face both ends of a cylinder at one time, and that it will finish in this manner nine cylinders 10 inches diameter by 12 inches long in ten

hours. I ask where such a machine can be bought in this country that can do this? I know that this has been done by many American machines."

"Where can you find finer designed or better constructed boring and turning mills—sometimes called horizontal lathes—than those made by the Niles Tool Works, Bullard Company, Pond Company, &c.? In fact, such machines have not been made in this country until a couple of years ago, with the exception of Richards & Co., Manchester, who make them only in small sizes. Those now made by one or two Manchester firms are not so well designed as the American, because of want of experience in their use and construction. Their prices are as high, if not higher than the American, and as for time of delivery—well, the least said about that the better."

"'Anglo-Saxon' says that as I did not purchase the British boring machine how can I speak with authority about it. I reply that I made full inquiries from those who had similar machines at work. Further, that we have in our own works, made by the same firm, a horizontal boring machine. Though this machine is not exactly of the same type, yet our use of it has enabled us to speak with authority. I shall not have the slightest hesitation in giving my experience after six months' work with these American machines."

Theodore Coventry, Manchester, says: "Turning to Mr. Campbell's letter generally, if he had been as well informed on the subject of British as he appears to be on that of American machine tools, he certainly would not have put pen to half the statements he has made, as they will not bear the test of the most superficial examination. For instance, Mr. Campbell states that 'boring and turning mills were not built in England until a couple of years ago, and then only in small sizes by Messrs. Richards & Co. of Manchester. It will no doubt surprise Mr. Campbell to learn that my firm have been building boring and turning mills steadily since May, 1889, in sizes ranging from 2 feet 6 inches to 20 feet in diameter, but—alas for the British enterprise!—75 per cent. of these were for the Continent. The question of delivery is one that could easily be met in ordinary times; but the whole British machine tool trade is at the present time so abnormally busy that quick deliveries are an impossibility, hence the American opportunity. That many orders pass us on this account—and this account only—for these very machines, we have had ample proof lately, but the output of a works is limited, even when the plant has practically been doubled in the last three years."

Drilling Machines.

Mr. Campbell says: "What about drilling machines? Where can any one buy a drilling machine in this country with a movable head, as is common in the American vertical drilling machines? The head can be moved down close to the work and so support the spindle; heavier cuts and stronger feeds can be given to such a machine than if the spindle had to stand out some inches. Further, in some American drills the double gear can be thrown in and out of gear without stopping the machine—a feature which is valuable in tapping holes. A much greater range of feeds is given on the American drill than in ours, while automatic stops to the feed are quite common, but on our own tools I have never seen one fitted."

A correspondent replies: "With regard to drilling machines, the arrangement of 'movable' head was adopted by us years ago, but it is only of late that this plan has been favorably accepted by users."

Keyway Cutting Machines.

"What about keyway cutting machines? So far as I am aware, there is only one firm in this country who have a line of these, and it is an American patent. The patent, I understand, is in the tool used, and not in the actual machine itself. Some time ago we ordered one from the firm in question. The 'rig out' of tools was to cost more than one and a half times the cost of the machine. We were prepared to pay this, as we saw a saving. Nine months passed, and no machine came. We canceled the order, bought one in America for less than one-half the price of the British machine, and it was delivered at our door six weeks after the order was given. No machine could give us greater satisfaction, both as to quality and quantity of work, than the one we have. Why do not some of our tool makers take up the making of keyway cutters? There are practically none to be bought here. A splendid opportunity lies open here."

American Tools Gaining Ground.

"Rightly or wrongly, the belief is gradually gaining ground that American tools are superior to those of British make in accuracy, handiness and output. If this impression is an erroneous one, if it is based on ignorance of the merits of British tools, then the British tool makers have only themselves to blame. If their tools are equal or superior to American tools, let them advertise their

merits in a proper way, and not continue to hide their light under a bushel. Their former supremacy is now gone, or, at all events, very seriously challenged, and they must abandon their attitude of proud reserve and adopt a different system of advertising. When a buyer is in want of a machine, American makers, or their British representatives, furnish him with illustrations and detailed descriptions of their machine in which the special features of the design are fully explained and descanted on. In many cases illustrations of pieces made by the machine are shown, and the time taken to finish each, or the output per hour, is stated. This output is guaranteed, nor is the guarantee always valueless—*pace* some of your correspondents—since the makers will send a man to purchaser's works to prove it by actual demonstration. Granted that this is in the nature of a trial trip under the best possible conditions, it is at least something to go upon, an ideal to be striven for. The foreman then knows of what the machine is capable, and is in a better position to detect the lazy or incompetent workman, or to checkmate the maneuvers of the trade union shop steward.

"Contrasted with this, the attitude of the British maker is almost one of indifference. He says nothing whatever about output, and if his design of machine has any particular merits, the buyer has to put himself to a great deal of trouble to find them out. They are not detailed ready to his hand. He is a busy man, and has no time to make the necessary investigations. No wonder, then, that in so many cases he accepts what he finds so ready to his hand, and the American tool maker scoops in another order—and deserves it, too."

Another writer says: "It is the competitive side of the question that seems to me so important—I mean American enterprise and British indifference. I am not interested in any way whatever with any American firm, but it is sheer folly to imagine that if things go on as at present we shall retain our position. At first they came with hand tools, and few firms here can beat them in that line; then light tools, such as sensitive drills, turret lathes, light milling machines, and so on, and now they have commenced to supply heavy tools in earnest."

Still another writes: "I think the principal reason why the Americans have received such a harvest in this direction is simply because during the cycle boom the demand for special tools was so great that it was utterly impossible for English manufacturers to supply quantities anything like equal to the demand. In fact, during the latter part of 1896 and the first quarter of 1897 the writer offered to place orders with Birmingham tool makers to a total value of £3000, conditional as to date of delivery. The firms in question could not undertake to supply in time, the result being that I did not purchase American tools, but what we could not purchase from English stock we had made to our own specifications and drawings, the work being executed in various parts of this country."

On this branch of the subject Mr. Campbell says:

"I only wish to say that the British makers are living in a 'fool's paradise,' and that they will get a rude awakening the first slack time that comes. They are busy now mostly on our own home demands, the foreign trade—Britain's greatest trade—is being neglected, and the American is filling Europe, &c., with splendid tools. What a difficult matter it will be to oust them is known only to those who have attempted similar things in other lines. Go where you will on the Continent, you will find American tools having a sale before British tools. Explain it if you can. I cannot, except on the ground that they are better tools, and better brought to the people in want of them. I have been told by some tool makers here that even if they made as good tools as the American, they could not command the high prices. That, in my opinion, is a fallacy. The one thing the tool maker has to do is to convince the purchaser that his tool is better than any other make and he will get his price. It is a mistake, however, to suppose that the American machines are high in price as compared with those of our own good tool makers. I have given instances where they were cheaper, and I could multiply them. I am afraid, from conversations I have had with some of our tool makers, that they despise or affect to despise both American machine tools and American methods. These gentlemen, like the ostrich, bury their heads in the sand, and won't see what is going on about them. They tell me constantly, 'Oh, yes, American tools may be good enough for the cycle trade and other light work, but when it comes to general engineers' tools, where are they?' The answer, and the very correct answer, is 'That the American tools are there, viz., in general engineers' shops, &c., and are likely to increase much faster in number than British tools.'

Accuracy in American Shops.

"The first thing that strikes one is the common use of micrometer gauges and measuring machines in American shops. Quite a number of firms make these gauges

a specialty. A few shops on this side may use them, but they seem to be the exception and not the rule, and I have never seen a single British firm advertising themselves as makers of micrometer gauges. This speaks of the limited demand. I admit, of course, that the use of these gauges is not an infallible proof of good workmanship in every case, but it shows a more scientific method, and one likely to yield better results with equal degrees of skill. On this side we depend on the skill of the turner for the excellence of fit, say, of a shaft in its bearing, and of a keyed wheel on its shaft. A different diameter is required in each case, but how many British workmen could give the difference in size a name? In shops where wheels are forced on their shafts by hydraulic pressure—*c. g.*, railway wagon wheels—the skilled workman can tell by the 'feel' of his calipers just what fit will require a pressure of, say, 50 tons to force the wheel on; but not one in a thousand could name the minute fraction of an inch that represents the actual difference in diameter between the wheel and its axle.

"As a contrast to this state of affairs, we are told that in such shops as Brown & Sharpe's, Pratt & Whitney's and others the men ordinarily speak of 'a half' or 'a quarter,' meaning, not half an inch, or a quarter of an inch, but a half-thousandth or a quarter-thousandth of an inch; so accustomed are they to gauging their work to these fine measurements. As proof, too, of their general use, an American paper recently presented its readers with a supplement—a card intended for every day use in the workshop—showing by diagram the required clearances in thousandths of an inch for running fits, tight fits, and force fits respectively on any diameter of shaft.

"A common feature on good American tools is the micrometer index on every feed screw. No first-class machine is considered complete without it. Now, I shall not go so far as to aver that no British made machine is ever fitted with this attachment. But I have never seen one myself, and may safely say it is very far from common.

"Again, American tool makers will tell you within what limits of accuracy their workmen are constrained to keep, and they will guarantee that a machine—a lathe, *c. g.*—will have the alignment of driving spindle, tail stock, bed cross slide, &c., true within a certain specified limit. If British tool makers adopt the same methods in shop practice, and are prepared to guarantee the accuracy of their ordinary machines within a specified limit, then why don't they advertise the fact in your pages and those of your contemporaries, and in their own catalogues as well? As far as my own observation and knowledge go, such a guarantee is never offered, and buyers cannot be blamed if they conclude that the guarantee is not given because the machine would not bear the necessary test."

Appliances Not Made in England.

In one of his letters Mr. Campbell says: "As I stated at the commencement of this letter, there are several things which my critics have not touched upon. I would like to ask which firm in this country are going to be the first to make a full line of automatic gear cutting machines; which firm in this country are going to be the first to make a full line of keyway cutting machines; which firm in this country are going to be the first to make heavy turret lathes to deal with bars and castings; which firm in this country are going to be the first to make a tool grinding machine, such as the Sellers & Gisholt, for grinding lathe, planing, and shaping machine tools? None of these machines, and others could be mentioned as well, are practically made in this country."

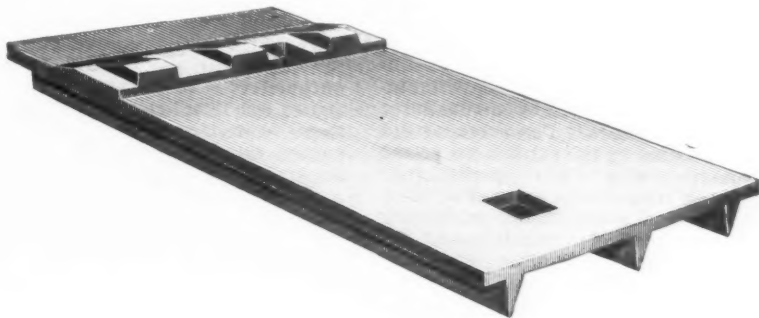
"There are other departments in tool making which British firms seem to have lost all hope of ever recovering, or if they compete with the Americans, do so in a small and spasmodic manner. I refer to the manufacture of milling cutters for gear wheels and other kinds, twist drills, reamers, chucking reamers and measuring instruments."

The nineteenth annual meeting of the Engineers' Society of Western Pennsylvania was held in the lecture room of the society's home, 410 Penn avenue, Tuesday evening, January 17, 1899. The following officers were elected: President, H. J. Lewis; vice-president, H. W. Fisher; directors, P. T. Berg, Prof. F. C. Phillips; secretary, R. A. Fessenden; treasurer, A. E. Frost. After the adjournment of the annual meeting, the one hundred and ninety-first regular meeting was called to order, and the secretary was instructed to write to the representatives of this district stating that the pending H. R. bill 10,403 was indorsed by the Engineers' Society of Western Pennsylvania, and urging them to support it. After a discussion as to the stand the Engineers' Society should take regarding the present agitation for the abatement of the smoke nuisance the society adjourned.

San Francisco News.

SAN FRANCISCO, January 16, 1899.—The year is now at an end and we have an opportunity of comparing it with its predecessor. And here the evidence is somewhat conflicting. In general trade the imports and exports are, on the whole, less than those of 1897. Clearing house exchanges in 1898 were \$213,153,024, against \$750,780,144 for 1897, a gain of about 8½ per cent., while the imports for the years were respectively \$36,063,124 for 1898 and \$46,846,791 for 1897, and the exports by sea \$36,196,873 for 1898 and \$44,280,000 for 1897. In the latter case the imports shrank about 10 per cent. and the exports a little over 18 per cent. The imports include silk in transit for the factories of the Atlantic Coast, and the exports a variety of merchandise in transit for China, Japan and the Australias, besides merchandise by sea for Atlantic ports and via Canadian Pacific for interior cities. But that does not affect the comparison of the years. There has been some falling off in our rail shipments East, too. The explanation is that our export trade has suffered from the failure of our cereal crops. With cereals eliminated, it has been larger than for the preceding year, and in 1897 there were heavier imports of teas and other goods on which it was expected that a duty would be placed to make up for deficient revenue. Our lessened income from cereals was made up by the increased income from other sources, the higher prices of fruits, the expenditures for Klondike supplies, and, above all, by the expenditures of the Government during the war. Then, 1897 had been a good year for producers, but as money for crops, &c., came late in the fall, a good deal of it was carried over and spent during the year just gone by.

for quite a while ruled at what used to be considered very low figures indeed in this market. Pig iron, too, has become little more than a mere empty name, as far as being a factor in this market. In 1897 the importations were 4004 tons. In fact, the duty and the price at which American is laid down here allow of no other conclusion. There has been a slight increase in imports of foreign scrap, but it is too insignificant as a factor in this market to be worthy of any further notice, and though relatively small in quantity, the increase in the importation of bar iron is of interest, as it shows that larger shipments here are possible. The quantity has more than doubled in a year. There has been an increase of nearly fourfold in the importation of steel ingots from abroad. They give some promise of attaining their former importance. And here I may remark that rumor has it that a steel plant in San Francisco is among the possibilities of the near future. We did not import as much machinery as in 1897, but a considerable quantity notwithstanding. This was in the earlier months of the year and was a part of what had been ordered the year previous. There was a great increase in the value of anvils imported as compared with 1897. This was also the case in firearms. There was a falling off of about one-half in sheet and plate iron. Wire and manufactures almost dropped out of the list altogether. There was a falling off of about one-third in the value of cutlery imported from foreign countries during the year. Files almost ceased to put in an appearance among the foreign imports. Miscellaneous articles, however, nearly doubled in value during the year. As to the countries of importation, they were confined for the most part, if we take into account values, to Belgium, England and Germany. A matter of nearly three-fourths of the bar iron was imported from Belgium, the



THE OLIVER STEEL TIE PLATE.

Ever since the new year opened we have had an almost steady downpour, the number of fine days being very few indeed. Almost every portion of the State has benefited by the wetting, the west side, San Joaquin, not, however, as much as the rest. All indications now point to a wet winter and a big crop year. The precipitation since the 1st has varied from 1½ to 5 inches, while a great deal of snow has fallen in the mountains, in some places as much as 40 inches. The rain and snow both will work the salvation of the miner. All this is especially interesting to the hardware trade, while our iron industries look to the mines as one of their mainstays.

I have just completed a compilation of the imports of iron and steel and manufactures thereof from foreign countries for the year 1898 at the port of San Francisco. The totals are as follows:

Pig iron, 1461 tons.....	\$17,578
Bar iron, 3,324,990 pounds.....	61,670
Scrap iron, 304½ tons.....	5,017
Railroad bars, ½ ton.....	15
Steel ingots, 1,160,196 pounds.....	31,618
Machinery.....	106,131
Anvils, 127,238 pounds.....	7,592
Chains, 4546 pounds.....	157
Firearms.....	10,671
Tin plate, 8,519,889 pounds ..	196,368
Sheet, &c., iron, 257,026 pounds.....	4,323
Wire and manufactures, 6415 pounds.....	906
Cutlery.....	12,906
Files.....	24
Iron and steel manufactures, &c.....	27,474
Total, 1898.....	\$482,450
Total, 1897.....	\$1,121,764

There is here a falling off of more than one-half and the principal loss is in tin plate. The loss in this one article is more than two-thirds. San Francisco once on a time was one of the best markets in the world, if not the very best foreign market, for English tin plate, but it has now shrunk to very insignificant dimensions. American tin plate rules and American syndicates, too, and for some time customers have been waiting to see what price would be placed on the article, which has

rest being divided between England and Germany, the latter considerably in the lead. Over two-thirds of the steel ingots were of Belgian production. Somewhat over 60 per cent. of the balance from England, the rest from Germany. The machinery was nine-tenths of it of Belgian workmanship, German machinery nearly all the rest. England was represented by a trace, as the analysts say. The firearms were from seven different countries, England and Belgium taking nearly all. England sent us the tin plate and the sheet and taggers iron. About 30 per cent. of the wire was of German manufacture, the rest English. A little cutlery came from France, but it has to be credited to England and Germany in the proportion of about three of the former to two of the latter. In the miscellaneous imports of iron and steel there were 12 countries represented, but Germany, England and Belgium, contributing in the order in which they are named, were the main sources from which we drew. The exports by sea to foreign countries of iron and steel and their manufactures in the month of December showed a falling off of about one-third when compared with those of November. The total was \$219,854, the largest single item being \$133,292 of machinery.

J. O. L.

The Oliver Steel Tie Plate.

The steel tie plate made by the Oliver Iron & Steel Company of Pittsburgh is 5-16 inch thick, and so formed that it will not buckle. The transverse rib on top prevents the rail from moving, as it serves as a rail brace. The flanges on the bottom become indented in the cross tie and hold the plate firmly in place.

A writing paper combination, involving the issue of \$42,000,000 worth of securities, is being formed under the management of Lee, Higginson & Co. and other Boston bankers. It is understood that the deal will include all the leading writing paper mills in the country.

The English Iron Trade in 1898.

BY WILLARD S. MATTOX.

MANCHESTER, ENGLAND, January 18, 1899.—The remarkable strides made by the iron and steel industries of the United States during the year just closed have attracted so much attention, both at home and in other iron producing countries, England, Germany, Belgium, &c., that a glance at the British trade for 1898 may not be out of place. During the past three years conditions have been so radically reversed in the commercial relations between Great Britain and the United States that it is a matter of interest to-day for American iron and steel producers to keep in touch with English affairs, where only a few years back we were but slightly careful of what was taking place on this side of the Atlantic.

The change has come so suddenly, America being now a seller, rather than a buyer, that English markets have hardly had breathing space to take in the full import of the new relations. One of the most striking features of the English iron trade for 1898 has been the commanding position assumed by American pig iron. Alabama iron has come to be a real and potent factor in English markets to such a startling degree, in the last year alone, that prices of native brands are actually influenced by American importations. There may be those who will take issue with me on this assertion, but it is substantiated by the history of the past year.

The English iron trade has shown no very pronounced symptoms practically since 1897. While American output and consumption have risen beyond the most Utopian views of any optimist, and there has been a distinct and marked individuality about our home markets, nothing very definite can be asserted of the British trade, which has shown nothing like the prosperity of the industry in the United States. Crippled and paralyzed by the great engineers' strike of 1897, the coal, iron, steel and engineering industries did not begin to recuperate until January, 1898. The process of building up vast businesses which had been suspended for months was slow and tedious work. The rebound did not come suddenly. At the time of the settlement of the great strike furnacemen found their yards full; thousands of tons had been turned into warrants; merchants had hundreds of pounds' worth of orders on their books which they could not collect; founders and engineers and consumers generally had unfilled contracts for pig iron and coke, interrupted when the strike began, to say nothing of orders they were unable to complete. When work was resumed it was not to be expected that activity would be shown at once or the effect felt on business generally. Orders for machinery had to be filled before new ones came in; merchants were obliged to finish old contracts for iron before their customers would hear of new contracts; furnace owners had to clear off stocks before they could really feel themselves on a firm and prosperous footing again. No wonder then, with this incubus brooding over the English iron trade, that the year 1898 has not been particularly noted for rapid rises or increased volume of business.

To some extent coal and iron and steel have benefited by the war alarms, and they have also received a mild stimulus from the influence of the general tendency to higher prices and the more remunerative condition of the ocean carrying trade, which has given an impetus to shipbuilding. Again, general trade conditions, when prices promise to be better, not worse, induce extensions of plants and additions of machinery, for which iron and steel are the materials.

Attention naturally attracts first toward the Cleveland or North of England district, for here is produced one-third of all the quantity of pig iron made in Great Britain. The trade for the year just ended has been encouraging, nothing more. A very serious item in the returns for this section of England shows that exports to foreign countries, principally Germany, Holland, Belgium, Switzerland and Italy, have been considerably less than for the two previous years. This is a threatening and significant state of affairs, and offers food for digestion in America, since American iron on the Continent comes into direct competition with Middlesbrough iron. The decrease in round numbers is about 270,000 tons less this year than in 1897, and 200,000 tons less than 1896.

What does this slump in exports to Europe mean? If it is significant of anything it shows that the balance of trade in raw iron has passed from the famous Cleveland district in England, to Alabama, in the United States. The quality of English iron has not materially deteriorated to cause it to be rejected by continental users. With the exception of Germany, none of England's European pig iron customers are producing to-day more iron within their own borders than they were two years ago, and even Germany, with her greatly increased blast furnace capacity, is still taking thousands of tons of imported iron annually. It would seem then

that we must look elsewhere for the cause of England's loss of her pig iron export trade. It is a simple proposition in logic. Europe is approximately buying as much iron to-day as she was last year. England's share has been cut into to a large degree. The export of pig iron from Alabama during 1898 has never been so great, and despite shipping difficulties and exorbitant ocean rates Southern furnaces have been pouring thousands of tons into northern parts of Germany, Holland and Belgium, into Hamburg, Bremen, Stettin, Rotterdam and Antwerp. With these premises, we can readily account for the difference of 270,000 tons British exports. The difference has gone to the United States.

If exports from the North of England have been unsatisfactory, the domestic market has been more cheering and affords a crumb of consolation. Trade has been growing all the year, slowly, but surely, in all the leading consumptive departments. The shipbuilding industry has shown a marked improvement, the output of yards in the Northeast Coast being computed at 850,000 tons, as compared with 554,000 tons of new shipping in 1897. Allied to this industry, a great number of engineering, forge and foundry works have been kept busy to supply the necessary shipbuilding requirements, and there has been, in consequence, an enlarged output of steel, chiefly in plates and similar classes of materials, during the year. The production of open hearth steel in the Cleveland district will work out over 1,000,000 tons, besides about 500,000 tons of Bessemer steel. Despite the fact that manufactured iron has been largely displaced by steel, there will be some slight increase shown in this department. The total production of this class of work will be in the neighborhood of 190,000 tons, an excess of about 20,000 tons over the year before.

The output of pig iron in the Cleveland district illustrates the statement that English markets have been in a negative state for 12 months. The production will not vary much either above or below the figures for the previous year, or in 1896. In fact, for three years the output has been about stationary, and although the statistics for 1898 are not to hand, they will not be far off those of 1897, when 3,197,641 tons of pig iron were turned out. Of this quantity about 576,000 tons were exported to foreign ports, Europe, the Colonies, India, Japan and China.

Prices for Cleveland and East Coast hematites did not show any alteration in the first half of 1898, immediately following the settlement of the strike, but during the last few months the now famous "corner" in Cleveland, already described in *The Iron Age*, sent prices up with a bound, only to drop as suddenly when the "ring" was broken. Steel ship plates have advanced during the year from £5 10s. to £6 15s.; steel angles and iron ship plates from £5 5s. to £6 10s., and common iron bars from £5 5s. to £6 2s. 6d. Cleveland pig iron, No. 3, at the beginning of 1898, was 40 shillings 3 pence, and closed at about 44 shillings 6 pence, a rise of about \$1 per ton on the year. Hematite has advanced from 49 shillings 3 pence to 55 shillings.

Lancashire produces pig iron, but is distinguished more especially as a consuming and manufacturing district. The year 1898 has brought to this country perhaps a larger share of benefits than to any other part of manufacturing England. Business and prices recovered more promptly after the depression of 1897, and all branches of the engineering, iron and steel trades have enjoyed a fair measure of activity, though comparing this district with the Pittsburgh area the increase in business has not been so flattering or phenomenal. There has, however, been a moderate upward tendency in prices both on raw and manufactured materials, which must of necessity have insured profitable results in the year's business. For the engineering trade the prospects in January, 1898, were extremely gloomy. By the suspension of all work big foreign contracts were passing from the Lancashire firms to their dreaded rivals in America and Germany. Colonial orders, which naturally came first to the parent country, had to be most unwillingly directed elsewhere, and the immense increase in the exports of machinery, tools, &c., from the United States shows how keen our producers have been to take advantage of the world's trade conditions. This diversion of trade from England to the United States, and to a lesser degree to Germany, will probably be found to be not merely temporary and dependent on local conditions prevailing at the time, but in a large measure permanent, for Lancashire machinery makers are finding it hard to-day to call back customers who were forced by exigency to seek supplies from other countries. Much of the business which was lost by England during the 1897 strike has gone permanently to America, for where our producers have once gained a foothold markets have been established and the trade nurtured by proving that we could supply quicker, and as good, if not better, quality of goods, and cheaper than our English competitors. This is one of the disastrous effects to England of the year 1897.

While the shipbuilding industry on the Clyde, at Belfast, and on the East Coast, will be found to have been unprecedented during the last year, the one exception is the Mersey yards, where no very great activity has prevailed. Speaking generally of all classes of the engineering trade, business has been active, and to all outward appearances booming, but it must not be forgotten that not nearly all of this was the result of new business. For months after the settlement of the strike in January, 1898, works throughout Lancashire were going full swing, but this energy was mostly expended in finishing big orders, held up by the strike, and the large accumulation of contracts requiring completion prevented any new orders being taken, so that all the business of the past year may not fairly be regarded as belonging to that 12 months, but rather an increment left over from the year before.

The machine tool trade, which is of considerable importance in Lancashire, has experienced a pressure of work both in light and heavy departments. The boiler making trade has been kept busy, and locomotive works are filled with orders up to the end of this year. Electrical engineering has felt recently the stimulus of England's awakening to her great needs and her possibilities, and this branch in Lancashire have had a pressure of new work which promises well for this year and the future. A noticeable feature in this connection and carrying out the thought indicated in my communication to *The Iron Age* on electricity in England, it is well to note that more attention is being paid in the North of England to electricity as a motive power, not only for crane work in shops where heavy work is done, but for driving all the general tools and plant of the largest engineering concerns.

In the pig iron trade there has been a noticeable tendency to put up prices, which have been firm all the year. The *bête noir* of the English pig iron trade during 1898 has been American iron, for it was in the early months of this year that Alabama iron became a keen competitor and assumed a serious position. The effect of American iron on English markets has been pronounced, and there can be no mistaking the tangible influence which the large importations of American pig iron has exerted on prices here. With the resumption of general activity, after existing contracts had been completed, there came a period of confidence and hope, which resulted in a great weight of buying. Furnaces were flooded with new orders, stocks began to reduce and every one predicted a big rise in prices. This would have been the natural and legitimate movement along lines followed by every trade boom. Left to themselves, English pig iron markets would have seen a rise of several shillings a ton more than the figures show. But at the first indication of a step in that direction, however slight, American sellers were "all over" the market, so to speak, with offers at considerably less than Cleveland, Lincolnshire or Lancashire makers were willing to look at. It soon became apparent to furnacemen here that they had to deal with a fighting element which was alert, dogged, persistent and formidable. To use the phrase of an English writer on the subject, "American iron has proved a ghost at all the banquets of good things," and a ghost which will not down. American competition has served the purpose of keeping English prices down, when there was every real reason that they should go up. English makers of pig iron found they positively dare not squeeze their prices up, for if they did watchful American sellers had taken advantage of them. This condition of affairs was rendered possible by the fact that English consumers have laid aside their patriotic prejudices and have come to regard American iron solely on its quality as being the equal of English iron, and they have been perfectly willing to take advantage of any wide or abnormal difference between home irons and Alabama pigs. Thus it has come about that American iron actually checked the English markets and developed into a factor hitherto undreamed of. But for this, and the further fact that shipping has been deplorably against American exporters all the year, the volume of business in American iron would have been double the returns shown for 1898.

The fact that to-day Alabama iron has a place of trust in English foundries and engineering works and forges is in a great measure due to the indefatigable efforts of several American firms of merchants, among whom can be mentioned pre-eminently Rogers, Brown & Co. of New York and Cincinnati, Ohio. This and other firms have been at great labor and expense to approach foreign fields intelligently, to study the peculiar requirements of their foreign customers and to supply only such qualities of iron as were best suited to the individual wants of each customer. As well in matters of delivery, remedying complaints, &c., has the English trade been judiciously fostered by Rogers, Brown & Co. to an extent best attested by the present status of American iron in this country.

The following table will approximately show the

fluctuations of native brands and American iron in Lancashire during the year, which I have divided roughly into three periods. The prices on English and Scotch irons are delivered by rail, Manchester, and American prices are free on quay, Manchester. There were many fine shades of gradation, but the three periods given will serve the purpose of indicating the radical changes:

Brand.	Grades.	In Jan., 1898.		In June, 1898.		In Dec., 1898.	
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Lancashire.....	Forge	45 6		47 6		51 0	to 51 6
Lancashire.....	Foundry	48 6		49 6		53 6	
Lincolnshire.....	Forge	43 0		43 6		48 0	to 48 6
Lincolnshire.....	Foundry	45 6		46 0		51 6	
Derbyshire.....	Foundry	47 6	to 48 6	50 0	to 51 0	54 6	to 55 0
Middlesboro.....	Foundry	48 9	to 49 3	48 7	to 49 4	54 4	
Glengarnock.....	Foundry	49 0	to 49 3	49 6	to 49 9	55 0	
Eglinton.....	Foundry	49 9	to 50 0	50 0	to 50 3	55 6	
American (G.M.B.)	Foundry	45 0	to 45 6	47 0	to 50 6	50 0	to 52 0

The figures in the above table may be taken roughly to show the various phases of the movement in prices during the year. It will be noted that there have been no radical changes, the advance in each half year being only normal and regular, in some cases, as in Lancashire foundry, only 1 shilling in the first half, though the last half of the year shows a jump of 4 shillings in both forge and foundry grades. Lincolnshire moved slowly the first six months, but bounded up during the closing months. The same will be seen to be true of all brands. This is accounted for by the fact that during the last few months American iron was not coming in in such quantities, owing to the excessive demand for our domestic markets and the improved condition of prices at home. With the field clear of this element, when it was known that American sellers were practically withdrawn from the market and were not offering, but were content to fill existing contracts, English iron followed its natural course in an upward tendency. It will be remarked also that with the varying changes of English markets Alabama iron kept even pace, maintaining itself always slightly under most native brands, with the exception of Lincolnshire. These changes in American prices also pretty accurately reflect the fluctuations of our own markets, though prices were sometimes held in check by English figures.

The finished iron trade in Lancashire followed the pig iron trade, and there was a gradual upward movement along all lines. Raw and manufactured steel, perhaps even more than iron, enjoyed a prosperous year. Advances in prices asserted themselves early in the year, and raw material has advanced 10 shillings to 12 shillings per ton, while ship and boiler plates have gone up something like £2 per ton during the 12 months. Local steel bars are up from £6 to £7 and local steel billets from £4 5s. to £4 15s.

The pig iron trade in the Midlands has been fairly prosperous, though latterly there has been a scarcity of good brands. Prices are up several shillings over early quotations. American iron has found great favor in the forges of the Black Country and has been entering this district in steadily increasing volume, partly due to the dearth of English iron of good forge quality. Makers of sheets and best bars have not had an altogether prosperous time of it in the Midlands, owing partly to freight difficulties and other local considerations, but at the last quarter day meeting of the ironmasters prices on black sheets and merchant bars were advanced, and further rises are anticipated in the new year.

Joliet Records.—The Joliet plant of the Federal Steel Company last week broke all previous records for turning out ingots, rods and billets. On Wednesday the converters turned out 2150 tons of steel, of which 1185 tons were made in 12 hours. Thursday the billet mill turned out 948 tons of billets, the greatest record ever made at Joliet. Monday the count was 934 tons, and Saturday 931 tons. Tuesday the rod mill made 708 tons of No. 5 rods in 24 hours. This breaks all former records, and before the month ends, the officials are confident, an even better showing will be made.

Commercial Traveling in South America.—An admirable monograph by William E. Torrens, which should be carefully read by every one interested in the Hispano-American export trade, has been published by the National Association of Manufacturers. It is the clearest and most straightforward report of its kind which has yet come under our notice and throughout exhibits a knowledge and insight which make the advice and recommendations tendered of the utmost value. It contains none of that drivel which characterizes the writings of the horde of amateurs with which American business men are only too familiar. Mr. Torrens divides his monograph into a series of chapters, the whole occupying about 50 pages. We heartily recommend the careful perusal of every line of it.

THE PORTO RICO TARIFF.

WASHINGTON, January 24, 1899.—Special Commissioner Robert P. Porter has completed a comprehensive revision of the tariff of Porto Rico, reducing the old Spanish rates approximately one-half and transmuting the currency to dollars and cents. The changes, it is believed, will open up a considerable market to the American manufacturer, especially of machinery and iron and steel products, in which producers in this country will have an important advantage over all foreigners on account of the proximity of the island to the United States and the correspondingly lower freight rates. The schedules of interest to the readers of *The Iron Age* are as follows:

Class II.—Metals, and All Manufactures in which a Metal Enters as a Principal Element.

GROUP 1.—GOLD, SILVER AND PLATINUM, AND ALLOYS OF THESE METALS.

22. Gold and platinum in jewelry or goldsmiths' wares, with or without precious stones or pearls; jewelry or wares of silver, with precious stones, pearls and seed pearls, not set, hectogram.....	\$7.50
23. Gold or platinum wrought in articles, other, of all kinds, hectogram.....	2.80
24. Silver in ingots, bars, plates, sheets or powder, kilogram.....	2.60
25. Jewelry or wares of silver, without precious stones or pearls, hectogram.....	1.50
26. Silversmiths' wares, other, of all kinds, and platinum in ingots, kilogram.....	8.00
27. Plate, kilogram.....	2.40

GROUP 2.—CAST IRON.

(1) Articles of malleable cast iron are dutiable as manufactures of wrought iron. Cast Iron:	
28. Pigs, 100 kg.....	\$0.10
29. Articles not coated or ornamented with another metal or porcelain, neither polished nor turned—	
a. Bars, beams, plates, grates for furnaces, columns and pipes, 100 kg.....	.50
b. Lubricating boxes for railway trucks and carriages, and railway chairs, 100 kg.....	.35
c. Articles, other, 100 kg.....	.75
30. Articles of all kinds not coated or ornamented with another metal or porcelain, polished or turned, 100 kg.....	1.20
31. Articles of all kinds, enameled, gilt, tinned or coated, or ornamented with other metals, or porcelain, 100 kg. 2.00	

GROUP 3.—WROUGHT IRON AND STEEL.

32. Iron, soft or wrought, in ingots or "tochos," steel in ingots, 100 kg.....	\$0.34
33. Wrought iron or steel, rolled—	
a. Rails, 100 kg.....	.425
b. Bars of all kinds, including rods; tires, hoops and beams, 100 kg.....	.30
c. Bars of all kinds of fine crucible steel, 100 kg....	1.40
34. Sheets rolled—	
a. Neither polished nor tinned, of 3 mm. and more in thickness, 100 kg.....	1.00
b. Neither polished nor tinned, of less than 3 mm. in thickness, and hoops, iron, 100 kg.....	1.00
c. Tinned and tin plate, 100 kg.....	1.30
d. Polished, corrugated, perforated, cold rolled, galvanized or not, and bands of polished hoop iron, 100 kg.....	1.20
35. Wrought iron or steel:	
Cast in pieces, in the rough, neither polished, turned nor adjusted, weighing, each—	
a. 25 kg. or more, 100 kg.....	1.00
b. Less than 25 kg., 100 kg.....	1.35
36. Cast in pieces, finished—	
a. Wheels weighing more than 100 kg., fish plates, chairs, sleepers and straight axles; springs for railways and tramways; lubricating boxes, 100 kg. .60	
b. Wheels weighing more than 100 kg. or less; springs other than for railways and tramways; bent axles and cranks, 100 kg.....	1.40
37. Pipes—	
a. Covered with sheet brass, 100 kg.....	1.40
b. Other, galvanized or not, 100 kg.....	1.40
38. Wire galvanized or not—	
a. 2 mm. or more in diameter, 100 kg.....	1.00
b. More than $\frac{1}{16}$ and up to 2 mm. in diameter, 100 kg. 1.30	
c. $\frac{1}{16}$ mm. or less in diameter, and wire covered with any kind of tissue, 100 kg.....	1.60
39. In large pieces, composed of bars or bars and sheets fastened by means of rivets or screws; the same, unriveted, perforated, or cut to measure for bridges, frames and other buildings, 100 kg.....	1.60
40. Anchors, chains for vessels or machines, moorings, switches, and signal disks, 100 kg.....	.80
41a. Anvils, 100 kg.....	2.50
42. Wire gauze—	
a. Up to 20 threads per inch, 100 kg.....	1.80
b. Of 20 threads or more per inch, kilogram.....	.05
43. Cables, fencing (barbed wire), and netting; furniture springs, 100 kg.....	1.00
44. Tools and implements—	
a. Fine for arts, trades, and professions, of crucible steel, 100 kg.....	5.00
b. Other, 100 kg.....	2.50
45. Screws, nuts, bolts, washers, and rivets; Parisian and similar tacks, per cent. ad valorem.....	5
46. Nails, clasp nails, and brads, kilogram.....	1.00
47. Buckles:	
a. Gilt, silvered, or nicked, kilogram.....	.20
b. Other, kilogram.....	.15
48. Needles, sewing or embroidering, pins, and pens; pieces of clock works, kilogram.....	.30
49. Crochet hooks and the like; hooks, hairpins, and surgical instruments, kilogram.....	.30
50. Cutlery of all kinds: tailors' scissors; side arms and pieces for same, kilogram.....	.40

51. Firearms:	
a. Barrels, unfinished, for portable arms, kilogram. .25	
b. Small arms, such as pistols and revolvers, also their detached parts, kilogram.....	1.00
c. Sporting guns: muzzle loading, and detached parts thereof, kilogram.....	.60
d. Breech loading, and detached parts thereof, kilogram.....	2.50
52. Manufactures of tin plate, kilogram.....	6.50
Wrought iron or steel:	
53. Articles of all kinds not specially mentioned, common, even coated with lead, tin, or zinc, or painted or varnished—	
a. In which sheet predominates, 100 kg.....	2.00
b. In which sheet does not predominate, 100 kg.....	2.00
54. Articles of all kinds not specially mentioned, fine, i. e., polished, enameled, coated with porcelain, nickel, or other metals (with the exception of lead, tin, or zinc), or with ornaments, borders, or parts of other metals, or combined with glass or earthenware—	
a. In which sheet predominates, 100 kg.....	3.00
b. In which sheet does not predominate, 100 kg.....	3.00

GROUP 4.—COPPER AND ALLOYS OF COMMON METALS WITH COPPER (BRASS, BRONZE, ETC.).

55. Copper scales, copper of first fusion, old copper, brass, &c., 100 kg.....	\$3.00
56. Copper and alloys of copper: In ingots, 100 kg.....	4.00
57. Rolled in bars of all kinds, 100 kg.....	4.50
58. Rolled in sheets, 100 kg.....	5.00
59. Wire, galvanized or not—	
a. 1 mm. and more in diameter, 100 kg.....	5.00
b. Less than 1 mm. in diameter, 100 kg.....	5.00
c. Gilt, silvered, or nicked, kilogram.....	.25
60. Wire covered with tissues or insulating materials; conducting cables for electricity over public thoroughfares, 100 kg.....	6.00
61. Wire gauze—	
a. Up to 100 threads per inch, 100 kg.....	5.00
b. Of 100 threads or more per inch, kilogram.....	.12
62. Pipes, bearings, plates for fire places, and boiler makers' wares, partially wrought, 100 kg.....	4.50
63. Nails and tacks—	
a. Gilt, silvered, or nicked, kilogram.....	.15
b. Other, kilogram.....	.10
64. Pins or pens, kilogram.....	.40
65. Articles not specially mentioned, varnished or not, 100 kg.....	.15
66. Articles, gilt, silvered, or nicked, not specially mentioned, kilogram.....	.25

GROUP 5.—OTHER METALS AND THEIR ALLOYS.

67. Mercury, kilogram.....	\$0.20
Nickel, aluminum, and alloys having for a basis these metals:	
68. In lumps or ingots, 100 kg.....	3.00
Tin and alloys thereof:	
69. In lumps or ingots, 100 kg.....	4.00
Zinc, lead, and other metals not specially mentioned, as well as their alloys:	
70. In lumps or ingots, 100 kg.....	1.00
Nickel, aluminum, and their alloys:	
71. In bars, sheets, pipes, and wire, 100 kg.....	7.00
Tin and alloys thereof:	
72. In bars, sheets, pipes, and wire, 100 kg.....	7.00
Zinc, lead, and other metals:	
73. In bars, sheets, pipes, and wire, 100 kg.....	1.30
74. Tin hammered in thin leaves (tin foil) and capsules for bottles, kilogram.....	.04
Nickel or aluminum, and their alloys:	
75. Articles of all kinds, 100 kg.....	.50
Tin and alloys thereof (Britannia metal, &c.):	
76. Articles of all kinds, 100 kg.....	.50
Zinc, lead, and other metals, and their alloys:	
a. Articles, gilt, silvered, or nicked, 100 kg.....	.25
b. Articles, other, 100 kg.....	.10

GROUP 6.—WASTES AND SCORIE.

78. Filings, shavings, cuttings of iron or steel, and other wastes of cast iron or from the manufacture of common metals, fit only for resmelting, 100 kg.....	\$0.15
79. Scoria resulting from the smelting of ores, 100 kg....	.03

Class XI.—Instruments, Machinery and Apparatus Employed in Agriculture, Industry and Locomotion.

GROUP 2.—APPARATUS AND MACHINES.

239. Weighing machines, per cent. ad valorem.....	15
240. Machinery and apparatus for making sugar and brandy, per cent. ad valorem.....	10
241. Agricultural machinery and apparatus, per cent. ad valorem.....	10
242. Steam motors, stationary, per cent. ad valorem.....	15
243. Marine engines: steam pumps; hydraulic, petroleum, gas, and hot or compressed air motors, per cent. ad valorem.....	1*
244. Boilers:	
a. Of sheet iron, per cent. ad valorem.....	15
b. Tubular, per cent. ad valorem.....	15
245. Locomotives and traction engines, per cent. ad valorem.....	15
246. Turntables, trucks, and carts for transshipment, hydraulic cranes and columns, per cent. ad valorem.....	15
247. Machines of copper and its alloys; detached parts of the same metals, per cent. ad valorem.....	15
248. Dynamo-electric machines:	
a. Exceeding 50 kg. in weight, per cent. ad valorem.....	15
b. Weighing 50 kg. or less; inductors and detached parts, per cent. ad valorem.....	15
249. Sewing machines and detached parts thereof, per cent. ad valorem.....	10
250. Velocipedes, per cent. ad valorem.....	10
251. Machines and apparatus, other, or of materials not specially mentioned; also detached parts of all kinds other than of copper or its alloys, per cent. ad valorem.....	15

GROUP 3.—CARRIAGES.

NOTE.—Carriages and other vehicles (except those for the conveyance of goods) imported in the rough or prepared for upholstering or painting, shall pay the duties corresponding to their class, with a rebate of 40 per cent., provided that the stipulated conditions be complied with.

252. Coaches and berlins, new, used, or repaired:	
a. With four seats, and calashes with two "tableros," per cent. ad valorem.....	40
b. With two seats, with or without folding seat; omnibuses with more than 15 seats; diligences, per cent. ad valorem.....	40
c. Four or two wheeled, without "tableros," with or without hood, irrespective of the number of seats; omnibuses up to 15 seats; carriages not specially mentioned, per cent. ad valorem.....	40
253. Railway carriages of all kinds for passengers, and finished wooden parts for same, per cent. ad valorem.....	15
254. Vans, trucks, and cars of all kinds; miners' trolleys, and finished wooden parts for same, per cent. ad valorem.....	15
255. Tramway carriages of all kinds, and finished wooden parts for the same, per cent. ad valorem.....	15
256. Wagons, carts, and hand carts, per cent. ad valorem..	15

W. L. C.

THE WEEK.

In his annual report to the Director of Public Safety of the city of Philadelphia, Chief Overn, of the Bureau of Steam Engines and Boilers, calls particular attention to the decreasing use of steam boilers, which in very many cases are being superseded by electric motors. During the year his bureau had noted 625 boilers that had gone out of use.

The present high price and strong position of copper has caused a wonderful revival in the Chilian copper mining industry. Advices from Valparaiso report that work is being started on new mines, and those that were closed down are now in full activity. A syndicate was recently formed in Paris to work some of the Chilian copper mines, and another company, with \$4,000,000 capital, have been organized at Iquique to work the borax deposits.

The Chicago *Chronicle* says that, pleased with the success which attended his efforts to organize the Auto-Truck Company in New York, Joseph Leiter has returned to Chicago to establish a compressed air auto-truck company in Chicago. It is said that the young promoter has already secured options on land in one of the large manufacturing suburbs of that city, with ample switching facilities on the Belt Line, and will at once begin the erection of an extensive plant for the manufacture of the new motors, the patent rights of which he controls.

The Russian Government has ordered a new cruiser of 6250 tons to be constructed at the Vulcan Shipbuilding Yards, Stettin, Prussia. Advices from St. Petersburg also report that it has been decided to build in Russian yards three battle ships of about 12,800 tons each and two cruisers of 6000 and 3000 tons respectively. Numerous torpedo boats are also now in course of construction for the Russian Government.

The *Marine Review* of Cleveland, Ohio, reports that within the past week or ten days Cleveland and Detroit ship builders have closed contracts for four steel freight steamers, all of the very largest class, 7000 to 8000 net capacity. The cost of these modern lake freighters is very close to a quarter of a million dollars each. The number of vessels of all kinds now under contract in lake ship yards is 31, and the aggregate value \$4,174,000.

President John J. Valentine of the Wells, Fargo Express Company, has issued the annual statement of production of precious metals in the States and Territories west of the Missouri River, including British Columbia and the Northwest Territories, for the year 1898. The aggregate valuations are shown as follows: Gold, \$78,461,202; silver, \$39,016,565; copper, \$46,200,648; lead, \$13,344,251. Total gross results, \$177,022,666. The year's combined product of the metals named is the greatest in the history of the countries—United States of America and British Columbia and the Northwest Territories—that of gold, \$78,461,202, being above any previous record officially reported.

The Secretary of War sent to Congress last week, with his indorsement, the report of Brigadier-General Wilson of the Engineer Corps of the Army on the survey and estimate for the improvement of the East Channel of New York Harbor, from the Narrows to the sea. General Wilson says that the Board is of the opinion that a channel, 35 feet deep and 2000 feet wide, should be provided, and the cost of making such a channel is placed at \$4,510,000. In view of the tendency to construct vessels of a deeper draft, the Board believes that the channel should eventually be deepened to 40 feet, and an estimate for this work is submitted, amounting to \$6,688,000. The deepest draft of steamers now using the harbor is 32 feet, but other vessels are being built to draw 33 feet.

Arrangements are being completed for the uniting under one corporation of the various concerns in Central and Southern Indiana and Ohio controlling illuminating and natural gas and electric lighting properties, plants and franchises in that territory. The new company, which will be organized as the Central Union Gas Company, under New Jersey laws, will have, it is said, a capital stock of \$60,000,000, half 7 per cent. cumulative preferred and half common stock. In addition to plants, including 930 wells and franchises, the new corporation will have 176,290 acres of land under lease for gas and oil purposes. E. C. Benedict, Chas. F. Dietrich, F. P. Olcott, Anthony N. Brady, John Sloane, Samuel Thomas and Samuel Thorn are the New York capitalists whose names are mentioned in connection with the enterprise.

The United States Arsenal at Springfield, Mass., lately turned out 400 rifles in one day, the largest single day's output in its history. The highest number reached hitherto was 350. The capacity of the small arms factory has been greatly increased in the past year.

An English Shingler.

[With Supplement.]

We need not say anything in justification of the reproduction of a photograph of an English shingler which we print in this issue. We are indebted for it to George G. McMurtry, president of the Apollo Iron & Steel Company of Pittsburgh, Pa., to whom it was presented by W. R. Lysaght, Swan Garden Iron Works, Wolverhampton, England. We understand that the photograph is that of one of their employees. As the representative of an occupation which is fast disappearing the appellation of "the last of his race" may soon be justified.

Electrolytic Galvanizing.

The U. S. Electro-Galvanizing Company, 346 Broadway, New York, about two years ago started to introduce a new cold process for galvanizing, and now a number of plants are running. The New York plant, with a capacity of about 2 tons per day, galvanizes any kind of jobbing work, and fills sample orders for manufacturers to show the advantages of the process. A glance at the old method will show clearly by comparison the advantages offered by this new process. As is well known, zinc is the only metal which will effectively preserve iron from rusting and therefore is used for galvanizing purposes. The process of zincing by heat is defective. It puts on much superfluous metal, leaving the surface of the object treated rough and uneven, and does not give a coating of uniform thickness and strong adherence. Screws and threads have to be recut after treatment, involving much extra labor. All such defects are claimed to have been overcome by this new process of electrolytic galvanizing.

A multitude of articles can thus be galvanized. Screws, nuts, cutting instruments, tools of every description, springs, locks (inside and outside parts), umbrella frames and artistic metal articles can be treated. Screws and threads need no recutting; springs preserve their elasticity and temper. The coating adheres to the surface of the iron and all designs retain their original forms. Iron sheets or wire can be bent, folded, twisted, &c., without injury to the galvanizing. The exposure of articles to atmospheric influences will not injure their rust proof character, nor will salt water cause corrosion.

Cast and wrought iron, steel, brass and copper can be treated, and such articles afterward brassed, coppered or silver or gold plated for decorative purposes. A considerable reduction in cost of operating is effected, 80 to 90 per cent. of spelter being saved, and there is also a saving in fuel. There is no dross, which in the old process consumes 30 to 50 per cent. of zinc, and the use of sal ammoniac is avoided. The gradual depreciation of the expensive zincing kettle, caused by burning out and the keeping up furnace fires day and night, essential with the old method, is entirely avoided. The size of the articles to be galvanized is immaterial, it being merely a question of making tanks to correspond. The bath prepared for galvanizing is permanent and only requires an occasional addition of inexpensive chemicals. Ordinary zinc plates are used for anodes. The process can be made continuous—that is, the articles first put in the tank will be galvanized and ready to be taken out by the time the tank is filled with the material to be galvanized, provided it is made of sufficient size. Electrolytic galvanizing is particularly adapted to articles consisting of two or more movable parts, such as pulley blocks, gauge tools, snap hooks, &c., as no parts are soldered together by the galvanic process.

The Iron Age.

New York, Thursday, January 26, 1899.

DAVID WILLIAMS COMPANY,	.	.	.	.	.	.	PUBLISHERS.
CHARLES KIRCHHOFF,	.	.	.	.	.	.	EDITOR.
GEO. W. COPE,	.	.	.	.	.	.	ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS,	.	.	.	.	.	.	HARDWARE EDITOR.
JOHN S. KING,	.	.	.	.	.	.	BUSINESS MANAGER.

THE IRON AGE INDEX.—The index to Volume LXII of *The Iron Age*, July-December, 1898, is now ready for distribution. It will be forwarded to applicants at the offices of *The Iron Age*, 232-238 William street, New York; Forrest Building, 117-119 South Fourth street, Philadelphia; Hamilton Building, 335-337 Fifth avenue, Pittsburgh; Fisher Building, Dearborn and Van Buren streets, Chicago; Pickering Building, Fifth and Main streets, Cincinnati; Commercial Building, 520 Olive street, St. Louis; Mason Building, 70 Kilby street, Boston, or Cuyahoga Building, 311 Superior street, Cleveland.

Natural and Equitable Freight Rates.

Our attention is frequently called to instances in which freight rates on iron and steel appear to be arranged for the purpose of discouraging business. Doubtless railroad managers make up their schedules on some well conceived plan by which the various rates should harmonize on related merchandise. It would be a reflection on their intelligence and their knowledge of general business to think they had any other end in view. They have their troubles and annoyances, and must seek to make them as light as possible, and therefore endeavor to avoid the appearance of unfair discrimination against any class of shippers. Nevertheless, rates are made, and occasionally enforced, which seem to have no equitable basis for their adoption. When they are enforced the shipments made under the classification fall to such small proportions that the excessive character of the charges ought to be plainly manifest to the rate making authorities. If no change is then made such rates are certainly clearly open to the criticism of willfully discouraging business.

A flagrant case of this kind may be found in the tariff now in force on old iron and steel from Chicago to the Mahoning Valley and Pittsburgh. The published rates are \$2.10 per ton to Mahoning Valley points and \$2.50 to Pittsburgh. These rates are so high as to be almost prohibitory. Consumers at the points named cannot afford to pay over a certain price for old material, while dealers at Chicago are unable to force their buying prices below a certain level there, and the imposition of the high freight rates above quoted brings the movement of such material eastward practically to a standstill. These rates are not new, but have been quoted in rate sheets for several years and spasmodically enforced. The history of their enforcement is that business has always been checked at such times. After a period of light traffic of this character the freight solicitors of the railroad companies have grown uneasy at the loss of considerable tonnage and made concessions. The ice once broken, competing lines have offered greater inducements, and more than once the rates have been cut as low as \$1.25 to the Mahoning Valley and \$1.75 to Pittsburgh. These rates were made during the late period of freight demoralization which ended January 1, when the full tariff was restored. The very low

rates of \$1.25 and \$1.75 above named were claimed by the railroad companies to net them an actual loss on all the traffic thus carried, and their statements may be accepted as correct.

Inasmuch as these railroad companies have found that invariably their scrap traffic has shrunk to almost nothing when the full tariff was imposed, and that business immediately began to move when a concession of 50 cents per ton was made, the inference seems to be plain that a natural rate is to be found and applied which would be just to all interests. This rate appears to be \$1.60 to the Mahoning Valley and \$2 to Pittsburgh. It is true that the railroad companies have frequently gone much below these figures, but no real necessity existed for doing it and the trade has not demanded it. Dealers and consumers, however, are desirous of some stability in the matter of freight rates, so that they may be able to make contracts for the future with a degree of freedom which is not enjoyed under the conditions so long prevailing.

Other examples might be cited to show that on numerous commodities handled in considerable bulk, and affording important traffic to railroads, a natural freight rate is evolved from long experience which would be fair to all parties. The rate may not be completely in line with the rate on some other commodity which is regarded as closely related. But that is or should be regarded as a secondary matter when it plainly conflicts with the currents of trade. That it is not always given prime consideration is shown by the reckless manner in which special rates are made when traffic is wanted, even to the extent of disregarding the cost of such transportation. Therefore, natural rates should be established in order to promote stability and avoid violent fluctuations.

Standards of Comparison Changing.

Apprehension is felt by many that the volume of business attained within the past month is too great to be healthy. It is regarded as extraordinary and is characterized as unusual. All sorts of strong adjectives are necessary in describing the condition of the iron trade, and larger figures than ever before, similarly employed, are necessary in stating transactions. The magnitude of the business staggers even those who had been looking forward to great commercial achievements whenever the country might be relieved of the pressure of the innumerable disturbing influences so long felt. Expecting much but getting a great deal more than expected, it is not surprising that men should feel solicitous about the future. They are apprehensive that the requirements of many months are being anticipated, and that the future is being discounted. They have perhaps been in business long enough to have seen this happen before, and are therefore fearful that history is to repeat itself. But they must make up their minds quickly on this point, as, if they are mistaken, and ill timed conservatism directs their policy, they may make costly errors.

Looking at the condition of business broadly, the impression deepens that our standards of comparison must be changed, in order to correctly gauge present progress. We have passed permanently from an eight or nine million ton country in the matter of pig iron, and must think of ourselves as on an eleven or twelve million ton plane. We have likewise passed from the level of an annual production of five to six million tons of steel, and must base calculations on an output of seven to eight million tons. Corresponding expan-

sion must be considered in other lines. The country has grown in population and in wealth, and it has not lost in enterprise and the spirit of progress, and the volume of business must grow to correspond with the other advances made. We have seen occasions when an increase in the volume of business would immediately be accompanied by speculation. Great blocks of pig iron would be bought, merely to be held for a rise. Steel rails would be ordered far beyond the legitimate needs of a railroad company, to be resold later at a higher price. Warehouses would be filled with great stocks of nails, held by men who knew nothing of the nail trade. But has the recent expansion in business been attended by anything of this kind? Orders have been placed for the delivery of material over many months in several lines, but as far as known all such material will be needed, and meanwhile the demand is urgent for prompt shipment for immediate consumption. As spring approaches the demand bids fair to be greater than now instead of diminishing. It is not yet time for apprehension. Such a time will come, no matter how great our prosperity may be, but it is not now near at hand. The pessimist is the loser at present and the optimist the gainer.

Speculation in Industrial Stocks.

Not the least interesting feature of the tendency toward industrial consolidation, which has become particularly active of late in the steel and iron trades, is the introduction of a new element in the field of speculation. Time was when practically the only shares dealt in on the Stock Exchange were those of railways—mining stocks being then as now relegated to less prominent channels of speculation—but the stock list of to-day embraces a wide range of "industrials," the number of which, as well as the extent of transactions, is steadily increasing. "American Steel and Wire" and "Federal Steel" henceforth doubtless will be terms as familiar in financial news columns as the names of the oldest and best known railways. It is not improbable, either, that in time the shares in these companies will be quoted on foreign bourses, just as "American rails" are to-day. It is useless to preach against stock speculation, however. Besides, it need have no more actual connection with the conduct of a business by a corporation than speculation in wheat has with the farmer's labor. And yet there is one sense in which an influence may be exerted by the stock speculators, in the organization of trusts or combines, that should be guarded against by the owners of industrial plants.

It must be admitted, not only that two or more persons or corporations in the same business may have every moral and legal right to combine their interests, but that in certain circumstances failure to do so would be an unwise neglect of an opportunity for mutual benefit. It may be that there are too many competitors in a given field, and that by consolidation the best features in the business of each may be preserved in a compact organization, large enough to supply the whole demand, under conditions which will enable a profit to be made. If such consolidation is the means of lessening the cost to consumers, the enmity of the public and of dealers is avoided, and the liability of new competing companies to spring up is lessened. Furthermore, if the capitalization is not unduly expanded, requiring for dividends an amount beyond a reasonable profit on the whole volume of business, the consolidation may have a long period of

control of its field. A combination formed on the opposite lines of overcapitalization, advanced prices and general disregard of the rights of others, may be expected to be attached speedily, both by new competitors and by public sentiment as voiced in legislation. But in any event the speculative element will dabble in the stocks of the company if any opportunity offers. It is not necessary, for this purpose, that a stock should be "listed" on the exchanges. Yet all this need not give concern to the management of such corporations as we are considering, whose business is to render the best possible service to the public, or to their customers, at prices which will yield the best possible dividends for the stockholders. A railway is worth intrinsically no more and no less because the quotations for its stock have been influenced respectively by "bulls" or "bears," no matter what difference in "values" may be indicated by Stock Exchange figures. And so with the "industrials."

There is one point, however, with regard to the speculative element which should be considered whenever a new consolidation or combination is suggested. Whenever the initiative is taken by professional "operators" the chances are that the chief end in view is neither improvements nor economies in manufacture, better service of the public, nor any other of the reasons usually set forth in the prospectuses drawn up to attract investors. Every purpose of such promoters will have been served when the consolidation has become an accomplished fact and they have pocketed their consideration. If the proposition which such promoters have to offer possesses little merit their reward for carrying it through may be all the greater. As a rule the concerns joining a trust do so only when they can sell out for more money than they could make by remaining in business, and if they are not doing well they can afford to divide liberally with a successful promoter. The original stockholders in a trust promoted by professional speculators are apt to "unload" at the first opportunity for getting a good price. The public, once led to invest under circumstances, may then be victimized again, by the manipulation of stocks until prices fall, when they can be bought and resold, at a rise, to a new set of investors.

Industrial concerns having a better reason for existence, with a reputation for being well managed and a reasonable certainty in the way of dividends, offer fewer opportunities to the "professional" to tamper with their stocks, just as the railways of established solvency and regularity in paying dividends are referred to as being out of the "speculative class." At an earlier day few people thought of buying railway shares as a permanent investment, but only with a view to speculation. The investors who held the shares cared little about betterments and earning capacity; the less certain the declaring of dividends, the more opportunities existed for unsettling the market by cunningly circulated rumors. Some such experience will have to be gone through with, no doubt, by many of the "industrials." For the present their merits can be discussed intelligently by few people as compared with the number who keep informed regarding railway conditions and earnings. In the end this difference is bound to disappear. Meanwhile the heads of industrial concerns would do better to stick to their business than to attempt to increase their profits on the Stock Exchange through the medium of a trust. As for those concerns which have not joined any combination, the caution is worth repeating—to be slow to deal with propositions emanating from so-called "financiers," possessing none of the qualifica-

tions for managing the business, rather than from the best elements within the limits of the business to be affected.

It may be mentioned, among causes favoring the present tendency toward closer industrial consolidation, that conditions have been more favorable of late for profits from production than for a long while past—a fact which the professional element have not been slow to utilize in attracting the attention of investors. Another feature is that the marked rise in securities for some time past has yielded profits to everybody who has handled them, with the exception of the latest holders, and the latter have, in most cases, stocks worth all that they have cost. The prices of securities had been low for so long a time that people are prone to forget that the present quotations are high only as compared with the figures during the period of depression, and that many of them have been higher in the past than now. Thus has been afforded of late an example of trading in stocks when every dollar made has not been offset by the loss of a dollar by some one else. But when the reaction comes, and every recent buyer is wildly anxious to sell, it need not be surprising if some of the "industrials" are not the strongest stocks on the market.

One of the interesting questions which is arising in connection with the consolidations in the iron trade is what those who have sold out propose to do with the money which they have obtained from the sale of their holdings. The transfer of capital in the iron industry has been exceedingly large. In the case of such concerns as the Federal Steel Company, a very large proportion of the money invested by persons long identified with the constituent companies has been drawn out for good. In the case of other concerns, like the American Tin Plate Company, and to an even greater extent the American Steel & Wire Company, the people who have parted with their holdings have reinvested them in the new concern. Still, the actual cash which has been paid over and which is seeking profitable employment has been very large. Some of the concerns who have sold out for cash had a very large number of stockholders, one in particular having on their books over 500 names. In the tin plate industry there were a large number of small works and the ownership was largely in the hands of local men of moderate means who depended upon the ability of personal friends. It is probable that the capital thus displaced will not readily seek opportunities in the iron industry. There remains, however, one class of men whose life has been spent in the iron trade, who have prospered in it, and who evidently propose to stay in it. We have had sundry indications that these men are looking for opportunities in some branches, and that therefore we may witness the curious development that restriction of competition in one field may create new rivals in others.

The trade figures of the Dominion of Canada for the six months ending December 31 last show an increase in the aggregate trade of over \$14,000,000. The figures were \$177,864,318, as against \$163,361,937 for the six months in 1897. The increase is wholly due to imports, as there was a decrease of \$1,700,000 in exports. The duty for the six months increased by \$2,300,000 over 1897.

In 1897 the Quebec Provincial Government conceded to certain parties the right to develop the water power at Shawinigan Falls on the St. Maurice River, Canada. A condition was that within 18 months the concessionaires should expend \$2,000,000 in improvements, and within three years they should spend in all \$4,000,000 in

works, &c. The Shawinigan Water & Power Company were formed last year, and they let contracts for constructing works for the utilizing of the water powers. It is, and for some time has been, open to negotiations with manufacturers who want to locate at a center of cheap power. It is now stated that a company are being organized with \$1,000,000 capital for the purpose of manufacturing calcium carbide there. The capitalists who are contemplating the enterprise are from Montreal, Boston and Paris. Shawinigan is expected to become one of the greatest industrial centers in Quebec.

OBITUARY.

LAZARUS LISSBERGER.

Lazarus Lissberger, who for over 30 years was actively engaged in the iron and metal business in New York City, died January 21 at his home, 118 East Sixtieth street, New York aged 59 years. He was born in Baden, Germany, and came to this country in 1847. In 1854 he began the iron and metal business at 283 Pearl street, which he conducted up to 1890.

BENJAMIN J. COLE.

Benjamin J. Cole, founder and head of the Cole Mfg. Company of Lakeport, N. H., and one of the oldest manufacturers in active business in that State, died on January 16 at his home, at Lakeport, after a long illness, aged 84 years. Mr. Cole was a pioneer in the development of the water power of Lakeport, and established the works now known as the Cole Mfg. Company, with which he was identified up to the time of his death.

DAVID W. HARRIS

David W. Harris, well known in the iron industries of the Pittsburgh district, died on January 12 in Pittsburgh, at the age of 53 years. He was a native of Wales, and emigrated to this country 17 years ago, locating near Pittsburgh, where he erected a tin plate works. This business he carried on, in connection with general furnace building and contracting work to the time of his death.

WILLIAM H. LAMPTON.

In the death, on January 17 in New York City, of William Henry Lampton, there passed away one of the pioneer ironmasters of the United States. Mr. Lampton, who had reached the age of 86 years, was for a long period engaged in the manufacture of iron at various furnaces in the Ashland, Ky., and Hanging Rock, Ohio, regions, and was at one time very wealthy.

W. H. BENNETT.

W. H. Bennett, one of the oldest and best known business men of Indianapolis, Ind., died January 16, at his residence in that city, after an illness lasting over three years. Mr. Bennett was born at Albany, N. Y., in 1828, and went to Indianapolis in 1853, when he formed a partnership with his brother-in-law, Deloss Root, and established an iron foundry under the firm name of Root, Bennett & Co. He was actively connected with the successors of this firm, the Indianapolis Stove Company, up to three years ago, when he was stricken with apoplexy and permanently laid aside from business.

GEN. SELDEN E. MARVIN.

Gen. Selden E. Marvin of Albany, N. Y., died on January 19 in New York City, where he had been undergoing medical treatment for an illness extending over several months. He was born at Jamestown, N. Y., on August 20, 1835, and at the outset of his career studied law in the office of his father, Judge Richard P. Marvin. He subsequently entered the banking business, but in 1862 entered the army and served throughout the Civil War, at the close of which he became adjutant-general on the staff of Governor Fenton of New York. When his term as adjutant-general was over, in 1868, General Marvin went to New York and engaged in the banking business as a member of the firm of Morgan, Kern & Marvin. In 1873 this firm were dissolved, and in the following year General Marvin went to Troy as the representative of Erastus Corning's interests in the iron and steel house of John A. Griswold & Co. On March 1, 1875, he organized the Albany & Rensselaer Iron & Steel Company, becoming their secretary and treasurer. Ten years later the Troy Steel & Iron Company succeeded the old company. General Marvin in 1895 assumed the receivership of the Perry Stove Company. He was at the time of his death president of the Hudson River Telephone Company and the Albany City Savings Institution, treasurer of All Saints' Cathedral and a member of the State Board of Charities. He belonged to several social clubs and religious bodies.

GEORGE PENN.

George Penn, proprietor of the Penn Spring Works, Baldwinsville, N. Y., died January 20, aged 57 years.



AN ENGLISH SHINGLER.

LOUIS MUELLER.

The death took place on January 14, at Newport, Ky., of Louis Mueller, secretary of the Anniston Iron Pipe Works, aged 44 years.

— [W. C. WHITE.] —

W. C. White, proprietor of the W. C. White Boiler Works of Montreal, Canada died January 19, aged 70 years. Mr White was born in Paisley, Scotland, and went to Montreal, Canada, in 1853, where he began business in 1860 as a boiler and steamboat builder. He was also a manufacturer of lead pipe and was one of the best known business men of his city.

The Manufacturers' Association.

(By Telegraph.)

CINCINNATI, OHIO, January 24, 1899. — The fourth annual convention of the National Association of Manufacturers met in Odd Fellows' Temple, Cincinnati, Tuesday morning, for their first session. The attendance was large, comprising not far from 300 members and 100 visiting manufacturers, not counting citizens of Cincinnati. The presence of so great a number was inspiring and much enthusiasm was injected into all the proceedings. The local committee, of which Thomas P. Eagan is chairman, had made elaborate arrangements for the convenience and entertainment of the members, which were highly appreciated when each one perused the programme placed in his hands. The badge was significant, the leading feature being a representation of the earth with the inscription round it, "American Manufacturers for the Trade of the World." This was the spirit of much of what was done. Mr. Eagan called the convention to order and introduced Governor Asa S. Bushnell, himself a Springfield manufacturer, who welcomed the convention to Ohio. He next introduced Mayor Gustav Tafel, who spoke for the city. He next called upon President Theodore C. Search of Philadelphia, who thanked the Governor and Mayor for their warm greeting and dwelt upon the fact that the association had been organized in Cincinnati four years ago and after meeting in other cities had returned to its birthplace to show what progress had been made in the meantime. The membership is now spread over 15 States and the good work will be continued until every State is represented.

William B. Melish, chairman of the Entertainment Committee, humorously set forth the leading features of their programme.

Thomas McDougall, for the E. D. Albro Company, presented to the association a gavel made of ebony from the Philippine Islands, satinwood from Porto Rico, cedar and mahogany from Cuba and hollyhock from this country.

President Search read his annual report, which was a comprehensive and remarkably able document, dealing largely with our foreign trade, but paying proper attention to important domestic questions. He showed clearly the necessity of such an organization as this to devise and accomplish measures needed to advance the interests of our manufacturing industries and those dependent on them.

After showing the growth of our exports of manufactured products he suggested that some practical plan should be devised to unite all the efforts now being made to promote our foreign trade, to prevent a waste of energy and duplication of work. He also suggested that the various organizations of manufacturers should co-operate in endeavoring to correct the evil of the multiplicity of State laws affecting foreign corporations, which are a constant vexation and injustice to manufacturers and merchants. He believed that the association should have representation at Washington to keep closely in touch with legislative matters of deep interest to the members, as for instance the Nicaragua Canal, the merchant marine, the consular service, transportation interests and the proposed new Department of Commerce and Industries. His plea for subsidies to build up our merchant marine met with a hearty demonstration of approval. He argued in favor of a good representation at the Paris Exposition,

of the extension of the parcel post system to more foreign countries and better legislation to protect patents and trade-marks, and set forth the great advantages which had accrued to the members from the establishment of the association's Bureau of International Freight and Transportation and the location of a warehouse for American samples at Caracas, Venezuela, stating that other warehouses were projected, notably at Hamburg, Germany. He showed how delinquent foreign debtors are being brought to time by the influence of the association and how valuable information is being secured by the association's correspondents abroad. His report makes a pamphlet of 34 printed pages.

Committees were appointed on credentials, resolutions, nominations, auditing, &c., the names being announced by Secretary E. P. Wilson of Cincinnati.

Tuesday afternoon the treasurer, Charles A. Schieren of New York, made his report, showing \$40,121 received the past year and about the same amount paid out, the balance from the previous year leaving a balance still in the treasury of \$2637. He placed the present membership at 834, a gain of 190. This does not include about 200 who owe dues for last year and are expected to pay.

Interesting reports were presented by P. W. Gates of Chicago, chairman Committee on Patents and Patent Laws; by Wm. C. Barker of New York, chairman Committee on International Freights and Transportation and manager of that bureau; by Charles A. Schieren, chairman Committee on Department of Commerce and Industry; by E. P. Wilson, chairman Committee on Internal Commerce and Transportation, and by Henry Fairbanks of St. Johnsbury, Vt., from Committee on Language, Weights and Measures. Of these reports, that by Mr. Barker was of surpassing interest, showing the practical work of his bureau in correcting antiquated stipulations in bills of lading adopted long before the age of steam and telegraph, and in securing low transportation rates for members to interior points in foreign countries.

A resolution from the Committee on Language, Weights and Measures, favoring the metric system and recommending as a beginning that the Government adopt the system after a certain date for all Government work, was referred to the Committee on Resolutions.

The same action was taken on a resolution submitted by A. V. Dee of Philadelphia protesting against the adoption by the railroads of 30,000 pounds as a minimum carload on certain classes of freight without adequate notice to shippers.

The evening was spent in the enjoyment of a smoker in the Scottish Rite Cathedral.

The most important action on Wednesday morning was the unanimous adoption of a resolution that the association earnestly petition and pray the Senate to promptly ratify the treaty of peace negotiated with Spain, and that the president immediately telegraph this resolution to the President of the Senate and send a copy to the President of the United States. Before adopting this resolution all questions of politics were disclaimed. Another resolution was unanimously adopted favoring the construction of the Nicaragua Canal and approving the bill which has just passed the Senate. Another resolution was unanimously adopted approving the Hanna-Payne bill for building up the merchant marine. The remainder of the morning was devoted to considering the president's report and its suggestions.

Information Wanted.—Who manufactures a machine called a "deck planing machine," the purpose being to true up floors or decks of vessels?

The Berlin Iron Bridge Company of East Berlin, Conn., have made what is believed to be the first shipment of a bridge to Hawaii.

Reade & Bowler, Cleveland, Ohio, have opened at 20-22 Frankfort street a machinery depot for the sale of second hand machinery. They occupy a building 50 x 100 feet, three floors and a basement. They also carry a large line of second hand belting, small tools, engines, shop fixtures, &c

MANUFACTURING.

Iron and Steel.

The statement of the Colorado Fuel & Iron Company, Pueblo, Col., showing production of iron, steel and iron ore during the year 1898, and compared with 1897, gives the following figures, which are in net tons: Pig iron, 1898, 98,568; 1897, 7372; Increase, 91,196. Spiegel, 1898, 2824. Steel rails, 1898, 82,447. Merchant iron, 1898, 21,758; 1897, 19,097; Increase, 2661. Castings, 1898, 6894; 1897, 822; Increase, 6072. Spikes, bolts and nuts, 1898, 5959; 1897, 3895; Increase, 2064. Iron ore, 1898, 223,897; 1897, 23,849; Increase, 200,048. Total production of coal, all mines, for 1898, 3,178,814; for 1897, 2,577,502; Increase, 601,312. Total production of coke, all ovens, for 1898, 453,920; for 1897, 284,180; Increase, 169,840. Value of iron, steel and iron ore, \$4,532,243.10. Value of coal and coke, \$4,736,854.75.

The Byesville Iron & Steel Company, with principal office at Cambridge, Ohio, have been incorporated, with an authorized capital of \$150,000, by A. M. Brown, C. M. Dillison, J. H. Opperman, W. L. Scott and B. T. Scott.

At the meeting of the stockholders of the Anderson Iron & Bolt Company, Anderson, Ind., John L. Forkner, John R. Page, Geo. Nichol, T. J. Mahan and A. J. Brunt were re-elected as directors, and who then elected officers as follows: President, George Nichol; A. J. Brunt, vice-president; John R. Page, secretary, and J. L. Forkner, treasurer.

The furnace property of the Cherokee Iron Company, at Cedartown, Ga., was sold January 3 at Sheriff's sale and was bid in by W. C. Bunn, acting as trustee for heirs and creditors of the A. G. West estate, and as agents for J. H. & E. F. Browning of New York. The property was sold in a friendly proceeding made by the administrator for the purpose of withdrawing the estate from the company. There is some talk of starting up the furnace.

Contrary to the report that the Westerman rolling mill in West Marlon, Ind., is to close down the first proximo, we are advised that the lessee, George R. Stewart, is still operating the plant and with every indication of continuance throughout the present year.

The following item reaches us regarding the Pine Grove Furnace at Hanging Rock, Ohio: This furnace made iron for the first time in 1827, and from that time to this the iron has been favorably known in the iron markets of the United States, having been shipped as far West as Denver and as far East as Boston. The company still have timber and ore in abundance, but could not make iron advantageously without building a modern furnace, and the outlook for the charcoal iron trade does not justify that. They can utilize their ores in their Hamilton coke furnace, and a great many of their old customers are satisfied to take the product of that furnace instead of the Pine Grove. But the Pine Grove retires from the field without having gone through bankruptcy, which is a record few furnaces in the Western country have made.

The Minnesota Iron & Steel Company, Minneapolis, Minn., are about to place in operation their new open hearth steel plant, consisting of two 15-ton basic open hearth furnaces with the necessary electric machinery for handling liquid metal, molds, ingots, &c. In the future their finished product will be principally open hearth steel and basic ingot iron in the form of bars, channels, angles and light section rails.

The Bellaire Steel Company, Bellaire, Ohio, have declared a 4 per cent. dividend out of the earnings of the past six months. The surplus was considerably increased in the same period.

The Reeves Iron Company, Canal Dover, Ohio, have commenced work on an addition to their plant which will be used for the manufacture of corrugated iron roofing and corrugated sheets.

A corporation will be formed at Chicago under the name of the White Diamond Steel Company, with a capital stock of \$75,000, by Russell C. Bloomfield, George W. Walker and Cyrus J. Wood.

The Corning Steel Company, 838 Monadnock Building, Chicago, now have their sheet mills at Hammond, Ind., in good running order, and are turning out both black and galvanized sheets of fine quality and superior finish.

Machinery.

At the annual stockholders' meeting of the Rodney Hunt Machine Company, Orange, Mass., on January 3, the old officers were re-elected, as follows: President E. N. Harris of Malden; treasurer, Nelson E. Harris; secretary, W. O. Harris, who with E. P. Pierce and John Dunbar constitute the Board of Directors.

The Cohoes (N. Y.) Iron Foundry & Machine Company on January 10 elected the following officers: President, A. E. Johnson; vice-president, S. A. Shields; secretary and treasurer, D. S. Johnston; manager, Jerome Garland.

The Betts Machine Company, Wilmington, Del., have just shipped one of their vertical boring mills to S. M. Smith Company, at York, Pa.; one of their horizontal boring machines to Elektriska Company, at Vasteras, Sweden, and a large slotting machine to the National Tube Works Company, at McKeesport, Pa.

The National Gas Machine Company, having their principal office at Moline, Ill., have been incorporated with an authorized capital of \$20,000. The incorporators are W. L. Velle, W. Butterworth and S. S. Poole.

By a fire in the shops of the Nashville, Chattanooga & St. Louis Railroad, at Nashville, on January 2, it is estimated that the road suffered a loss of about \$55,000.

At the annual stockholders' meeting of the American Bolt Company, Lowell, Mass., held January 10, the following directors were chosen: James Minters, Paul Butler, Percy Parker, Mrs. C. A. Butcher and Alfred Clark. Paul Butler was re-elected president and Percy Parker treasurer.

A dispatch states that the Century Foundry, at Dighton, Mass., has shut down indefinitely.

At the works of R. D. Wood & Co., Philadelphia, the machine shops and similar departments are running, and have been running for some time back, with a night force, and no slackening up can be seen through the orders ahead.

At the annual stockholders' meeting of the Vulcan Iron Works, Toledo, Ohio, on January 10, Merwin Jackson was elected a director to fill the vacancy caused by the death of Capt. John Smith. The other directors are W. H. A. Read, Alex. Backus, James Kewley and A. J. Kneiser. The officers are Alex. Backus, president, and W. H. A. Read, vice-president.

At the annual stockholders' meeting of the Buckeye Malleable Iron Company, Columbus, Ohio, held January 10, the following officers were elected: W. F. Goodspeed, president and treasurer; Frank Rockefeller, vice-president, and John Stafford, secretary.

According to a Milwaukee paper, the Edward P. Allis Company are preparing designs for the largest steam engines which have ever been built, in competition with other engine manufacturers, for an important projected enterprise. The specifications call for five engines, each capable of generating 15,000 horse-power for ordinary work and able to increase this to 20,000 horse-power without exhausting the reserve capacity. Each of these engines will cover a floor space of 60 feet each way, and will be 50 feet from foundation plates to engine top. They will each have four cylinders 113 inches in diameter, with a stroke of 72 inches. The same company have recently received a cable order from London for \$100,000 worth of engines and machinery for the city of London electric light plant.

The Cincinnati Machine Tool Company have purchased all the machinery, patterns and the whole plant, together with the business formerly operated by A. H. Kerkhoff & Co. of Cincinnati, Ohio, and will at once proceed in manufacturing the tools formerly made by this firm. There will be immediately an enlargement of the plant and the facilities, together with improvements in the tools so as to place them foremost in their line. The personnel of the Cincinnati Machine Tool Company consists of August H. Tuechter, who for the past 15 years has been identified with the Bickford Drill & Tool Company, and Sherman C. Schauer, who for the past 10 years has been superintendent of the Hamilton Machine Tool Company. The new concern commence business with orders ahead running the plant in full for three months, and they will be glad to have catalogues from all the other manufacturers to place on file for future use and reference.

The Q & C Company, whose main office is in the Western Union Building, Chicago, have added considerably to their manufacturing facilities at Chicago Heights, Ill., to meet the requirements of their expanding business. Two buildings have just been completed, each 65 x 200 feet, one story high, well lighted down the center by two rows of vertical windows in the continuous lantern. The company's main building is two stories high, covering a site 65 x 225 feet. The entire works are well served with shipping facilities by railroad tracks passing to the several buildings. The Balley blower system heats the buildings in winter and ventilates them in summer. Electric light is furnished by the company's own plant. The works were originally established for the manufacture of railroad specialties, but their scope has been considerably widened and they now make pneumatic hammers, riveters, &c., as well as numerous specialties used in general manufacturing. Their works comprise a brass foundry, blacksmith shop, pressed steel department, nickel plating department, galvanizing shop, grinding room, pattern shop, &c.

H. Fraser & Co., manufacturers of a new spiral knife wood planer, named the Convincer, are considering removal from Beloit to Oshkosh, Wis.

The Turner Engineering Company of Marion, Ohio, are thinking of increasing their capital stock from \$100,000 to \$150,000. They are negotiating with a number of capitalists at the present time. Of the original capital stock of \$100,000 of this concern, \$56,000 has been taken.

The Niles Boiler Company, Niles, Ohio, have purchased all of the machinery in the plant of the Rippel Foundry & Machine Company, Mount Gilead, Ohio, consisting of nearly 100 tons of the latest and most improved foundry and machine shop equipment. The same will be delivered to Niles, Ohio, immediately, where one building 50 x 128 feet and one building 50 x 112 feet will be erected in addition to their present boiler and tank shops. They expect to be in a position to turn out castings inside of 60 days.

The Wilmington Malleable Iron Company of Wilmington, Del., have just erected a new three-story building for offices, and will tear down the old one to make room for the new annealing room demanded by their increasing business.

The Economic Elevator Company of Brooklyn, N. Y., have been incorporated by Thomas Keenan, T. L. Fogarty and C. H. Hyde of Brooklyn.

The Bridgeport Boiler Works, Bridgeport, Conn., have been incorporated, with a capital of \$10,000, by Edward Morgan, Edward C. Spargo and Harris B. Smith.

At the annual meeting of the Etna Nut Company of Southington, Conn., on January 17, the following directors were elected: A. S. Upson, George B. Finch, H. H. Clark, Stephen D. Neal, M. H. Holcomb, M. N. Woodruff and E. E. Stow.

The annual meeting of the Utica Steam Engine & Boiler Works of Utica, N. Y., was held January 17, when officers were elected as follows: President, J. A. Omens; vice-president, George B. Clark; secretary, A. E. Omens; treasurer, H. C. Norton.

At the annual stockholders' meeting of the Plattsburg Foundry & Machine Company, Plattsburg, N. Y., on January 11, the following officers were elected: President, Hon. John M. Weaver; secretary and treasurer, John Ross, and general manager, S. D. Whittelsey.

The Falls Rivet & Machinery Company of Cuyahoga Falls, Ohio, are working on an order, placed with them some time ago, for 100,000 3-pound armor piercing shells for the army and navy departments.

The Manchester Union states that Frank Jones, Ezra H. Winchester, Calvin Page, trustees, and Charles H. Mendum have purchased the plant of the Portsmouth Machine Company, paying for real estate and machinery \$51,600.

The Buckeye Pipe Company of Cincinnati, Ohio, have been incorporated by H. P. Boyden, E. O. Eshelby, Lewis Voight, A. W. Wilkinson and J. Steele. The capital stock is placed at \$15,000.

The Laidlaw-Dunn-Gordon Company, Cincinnati, Ohio, manufacturers of pumping engines, steam pumps and hydraulic machinery, shipped last month five carloads of water works machinery, with condensers, air and circulating pumps and boiler feeders, for the Shanghai Inland Water Company, Shanghai, China. They are cross compound Corliss engines and the first of that kind ever sent to China. This company also shipped three carloads to India, one for Bombay, one for Calcutta and one for Singapore, and report the shipping every week of pumps to China, Japan, India, Denmark, Sweden, Holland and Russia, there being quite a growing export trade in their line of machinery and a large increase looked for in the future. Their export trade is reported to have been in 1898 just about double that of 1897, and in 1897 it was about double that of 1896.

The Totten & Hogg Iron & Steel Foundry Company, Pittsburgh, Pa., manufacturers of rolls and rolling mill machinery, have lately received an order to build a tin mill to contain two hot mills and three cold mills for the Alcania Company, at Avonmore, Pa., and an order from the J. C. Russell Shovel Company, Alliquippa, Pa., for an 18-inch special train of rolls for rolling shovel blanks.

The Standard Automatic Gas Engine Company of Venango, Pa., have been granted a charter with a capital of \$24,000. The directors are Jacob P. Strayer, John W. Raymond, William E. Blaney, John T. Sharp and Charles J. Rose, Oil City.

The Standard Scale & Supply Company, Limited, Pittsburgh, Pa., have recently furnished the following companies with Reed recording attachments for their railroad track scales—viz.: Illinois Steel Company, Joliet, Ill.; Union Iron & Steel Company, Youngstown, Ohio; Spearman Iron Company, Sharpsville, Pa.; Pennsylvania Car Wheel Company, Allegheny, Pa.; Girard Iron Company, Girard, Ohio; Oliver & Snyder Steel Company, New Castle, Pa.; Wharton Furnace, Port Oram, N. Y.; Etna-Standard Iron & Steel Company, Mingo Junction, Ohio; Jackson & Woodin Mfg. Company, Berwick, Pa.; Chicago, Lake Shore & Eastern Railroad Company, Chicago, Ill.; Cape Fear & Yadkin Valley Railroad, Wilmington, N. C.

The Walburn-Swenson Mfg. Company, founders and machinists, Chicago Heights, Ill., are about to extend their plant. They will erect a building 60 x 200 feet, one story high. Their present works cover quite a large tract, but are too small to accommodate their business.

The King & Andrews Company, Chicago Heights, Ill., whose new works were recently illustrated in our pages, have already been obliged to enlarge and are building an addition to their foundry, to be 50 x 100 feet.

The Bliss & Laughlin Company, manufacturers of shafting, Harvey, Ill., but recently completed a large addition to their plant and are now erecting another building, which will be a one-story brick structure, 40 x 217 feet.

Hardware.

Fred Haberman, a well-known hardware merchant of Marion, Ohio, has acquired the plant of the Triumph Mfg. Company at that place, with patents, stock, &c. Mr. Haberman has not yet made up his mind as to what disposition he will make of his purchase.

The Belleville Tack Works, Belleville, Ill., who use as raw material a superior grade of shovel plate, report an excellent run of business for all styles of cut nails.

The American Axe & Tool Company have notified the employees of their works, at Beaver Falls, Pa., that when the plant resumes operations this week there will be a reduction in wages varying from 10 to 20 per cent.

PERSONAL.

The only offices which have been filled by the Illinois Steel Company since the resignations announced some time since are those of president and secretary. Eugene J. Buffington was elected president and T. J. Hyman secretary. Geo. Baker, assistant general sales agent, will until further notice be in charge of the sales department.

F. Soderman, C.E., who has been for several years assistant engineer of the Jackson Architectural Iron Works, has resigned from that position, and is now doing business as consulting structural engineer, with office at the Mohawk Building, 160 Fifth avenue, New York City.

John Birkinbine was re-elected president of the Franklin Institute of Philadelphia at the annual meeting of the Institute last week.

General Russell Hastings of Northampton, Mass., has been chosen by President McKinley as director of the Bureau of American Republics, to succeed the late Joseph Smith.

W. C. Magee, vice-president of the H. C. Frick Coke Company, sailed for Europe on Thursday, January 26. Mr. Magee will take the Mediterranean trip for the benefit of his health and expects to be absent about four months.

James E. Hubbert of Hubbert & Hubbert, manufacturers' agents, 938 Monadnock Building, Chicago, has been elected a director and vice-president of the Corning Steel Company.

Geo. E. Day, manufacturers' agent, Marquette Building, Chicago, has gone to California on a pleasure trip.

Thomas J. Hyman, late auditor of the American Steel & Wire Company, has been elected secretary of the Illinois Steel Company. Mr. Hyman has been connected as auditor with several railways and is regarded as an expert accountant, whose qualifications will make him a valuable man in his new position.

Alfred C. Cass, a vice-president of the Colorado Fuel & Iron Company, will soon sail for Honolulu, Japan and China to study the question of building up an export business in the Orient. The establishment of a line of steamers by the Atchison, Topeka & Santa Fe interests from San Diego to Asiatic points encourages the belief that valuable trade may be secured.

Destruction of a Mammoth Gas Holder.

In our issue of December 22, 1898, we described and illustrated the wreck of the mammoth gas holder of the Consolidated Gas Company, at Twenty-first street and Avenue A, New York. The tank collapsed and resulted in the death of eight men. The coroner's jury finished the investigation last Tuesday, the verdict being that the death of the men was caused by drowning and that the construction and materials of the tank were in accordance with the plans and specifications, and that the workmanship was of good character. The jury suggested that "in view of the fact that neither the design nor the construction of such gas holder tanks is under the official supervision of any city department we recommend that all such work in future shall be subject to proper municipal supervision and control." The testimony throughout indicated that there was no defect either in design or construction, and the actual cause of the trouble is as much a mystery as ever.

Announcement is made that I. S. Prenner, electrician for the American Carbide Company, has invented a process for manufacturing calcium carbide for the production of acetylene gas, which will so cheapen its cost that it can be sold at retail at 3 cents per pound, or less than one-fifth of its present price. The process has been successfully demonstrated in the laboratory of the Armour Institute with the assistance of C. E. Freeman, professor of electrical engineering. A plant is to be erected at Maquoketa, Iowa, to be operated under this process.

A report which has gained some currency, that the plant of the Maryland Steel Company, at Sparrow's Point, Md., has been sold to an English syndicate, is officially denied.

The Iron and Metal Trades.

A perfect craze is developing for consolidation, aided largely by the eagerness of bankers to promote such undertakings. They seem to be outbidding one another, and encourage the disposition to put fancy valuations on moribund properties. Active work is going on in the Cast Iron Pipe industry. In the Soil Pipe branch there has been a movement for some time, but it has been progressing so slowly that some of the concerns are growing impatient. A good deal of work has been done under the leadership of Gifford Ladd toward a fusion of the Bridge plants of the country. The Car Builders have had their meetings and the Sheet mills have been in conference over a plan to consolidate.

The most interesting developments during the week, however, have been in connection with the Tin Plate industry. The same parties who carried through the consolidation in this industry are reported to have perfected now a fusion of the leading makers in the Central West of Tin Plate Bars, five great plants being named, located at Youngstown, New Castle, Columbus and Wheeling. It is reported that arrangements have been made with one great works in Pittsburgh and another in the Wheeling district to secure exclusive control of this branch of raw material. In other words, outside mills are to find it difficult to obtain the needed Tin Plate Bars.

Another important step in the same direction is the completion of arrangements with foundries and machine shops who make a specialty of Tin Plate machinery to control their capacity for a considerable period. The effort evidently is to keep out a rush of outside capital into the business.

From all quarters come buoyant reports concerning the volume of business and the strength of the markets. In Pig Iron the demand is active, and what Iron is offered is readily snapped up without much quarreling as to prices. There have been some large lots sold for export, for delivery during the second half of the year, the aggregate being considerably above 50,000 tons. In Pittsburgh, Gray Forge has been active and has advanced.

The Billet market has been very animated, Eastern buyers having purchased considerable quantities in the Central West.

In the Steel Rail trade Pittsburgh reports the sale of one block of 30,000 tons, while a moderate business has been done by other mills. A considerable tonnage of Rails for foreign countries is being considered, but little has been actually placed.

Sales have been very active in Bars and in Car Material of all kinds. Among the transactions reported is a lot of 40,000 tons for Steel cars, to cover the material for some large contracts recently taken.

An important announcement to the West is the advance in freight rates on Southern Iron, which is to go into effect at an early date. It is 25 cents per ton to Ohio River points and 40 cents to points north thereof.

Foreign inquiries for all kinds of material continue numerous, and in some cases are pressing, thus showing that the advance has not frightened buyers off.

The American Steel & Wire Company have announced a further advance of \$1 per ton on Wire Nails, Barb Wire and Plain Wire. Their policy in regard to the sale of Wire Rods does not seem to have been developed as yet, and the large number of concerns making Wire specialties are totally at sea as regards their future supplies of raw material. The negotiations for the purchase of the Roebling plant are still pending.

Copper has scored a further heavy advance, closing at 15½c. to 16c. for Lake. Tin, under the whip of the London speculators, has been driven to 24½c. to 25c., and Spelter, too, has risen.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type.
Declines in Italics.

	Jan. 25, 1899.	Jan. 18, 1899.	Dec. 28, 1898.	Jan. 26, 1898.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia.....	\$11.50	\$11.50	\$11.15	\$10.75
Foundry Pig, No. 2, Southern, Cincinnati.....	10.75	10.25	10.00	9.25
Foundry Pig, No. 2, Local, Chicago.....	11.50	11.00	11.00	11.00
Bessemer Pig, Pittsburgh.....	11.00	10.90	10.75	9.75
Gray Forge, Pittsburgh.....	10.00	9.75	9.50	8.85
Lake Superior Charcoal, Chicago.....	12.00	11.50	11.50	11.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh.....	17.25	16.50	16.25	14.75
Steel Billets, Philadelphia.....	19.10	19.00	18.50	17.00
Steel Billets, Chicago.....	18.50	18.50	17.50	17.50
Wire Rods, Pittsburgh.....	19.00	24.00	22.25	22.75
Steel Rails, Heavy, Eastern Mill.....	19.00	18.50	17.50	18.00
Spikes, Tidewater.....	1.50	1.45	1.40	1.50
Splice Bars, Tidewater.....	1.10	1.10	1.05	1.15
OLD MATERIAL:				
O. Steel Rails, Chicago.....	8.00	8.00	8.00	8.50
O. Steel Rails, Philadelphia.....	11.50	11.25	10.25	10.50
O. Iron Rails, Chicago.....	13.50	13.00	12.75	12.50
O. Iron Rails, Philadelphia.....	13.50	13.25	13.00	12.50
O. Car Wheels, Chicago.....	12.00	12.00	11.50	11.00
O. Car Wheels, Philadelphia.....	10.75	10.50	10.25	9.75
Heavy Steel Scrap, Chicago.....	7.75	7.75	7.75	7.50
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia.....	1.15	1.15	1.15	1.12½
Common Iron Bars, Youngstown.....	1.10	1.10	.95	1.00
Steel Bars, Tidewater.....	1.15	1.15	1.10	1.10
Steel Bars, Pittsburgh.....	1.05	1.05	.95	0.95
Tank Plates, Tidewater.....	1.40	1.35	1.30	1.10
Tank Plates, Pittsburgh.....	1.35	1.30	1.30	1.00
Beams, Tidewater.....	1.40	1.40	1.35	1.30
Beams, Pittsburgh.....	1.30	1.30	1.20	1.15
Angles, Tidewater.....	1.30	1.30	1.20	1.15
Angles, Pittsburgh.....	1.20	1.20	1.10	1.00
Skelp, Grooved Iron, Pittsburgh.....	1.20	1.10	1.07½	1.07½
Skelp, Sheared Iron, Pittsburgh.....	1.35	1.25	1.22½	1.17½
Sheets, No. 27, Chicago.....	2.00	2.00	1.95	2.10
Sheets, No. 27, Pittsburgh.....	1.95	1.85	1.85	1.95
Barb Wire, f.o.b. Pittsburgh.....	1.95	1.90	1.65	1.75
Wire Nails, f.o.b. Pittsburgh.....	1.50	1.45	1.35	1.40
Cut Nails, Mill.....	1.20	1.20	1.10	1.10
METALS:				
Copper, New York.....	15.75	14.50	12.90	11.00
Spelter, St. Louis.....	5.15	.....	.....	3.75
Lead, New York.....	4.00	4.25	3.85	3.60
Lead, St. Louis.....	4.05	.....	.....	3.40
Tin, New York.....	24.50	22.30	18.55	13.80
Antimony, Hallett, New York.....	8.75	8.75	8.75	7.25
Nickel, New York.....	38.00	38.00	38.00	33.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York.....	3.15	3.15	2.90	3.05

Chicago.

Office of The Iron Age, 805 Fisher Building, }
CHICAGO, January 25, 1899. }

Matters are getting in such shape that the biggest manufacturers are trying their best to keep on good terms with their customers while refusing orders. The various concerns still able to sell are booking orders so rapidly that it is difficult to find any one able to take anything for reasonably early delivery. Even Eastern consumers are endeavoring to supply their wants in this market. Conditions are all pointing to a scarcity of all kinds of material.

Pig Iron.—The expected has happened. Southern freight rates are to be advanced probably 40c. per ton, to go into effect on February 6, making the Birmingham rate to Chicago \$3.50. At the same time the local producers of Pig Iron have advanced their prices 25c. to 50c. per ton over those of last week. The price of Charcoal Iron has also been marked up to correspond with the advance in other Irons. The advance made in local Iron has not curtailed sales, but actually appears to have stimulated buying. The demand for Southern Iron has been very good, and in excess of the supply. Quite a number of the Southern companies are completely out of the market, others ask prohibitory prices, and those who are naming reasonable figures cannot promise early delivery. It is a curious fact, however, that most of the sales agents express the belief that more danger exists of a scarcity of Iron than of very high prices. The sales of all kinds of Iron in this market in January have been unparalleled for the month. We quote for cash as follows:

Lake Superior Charcoal.....	\$12.00 to \$13.50
Local Coke Foundry, No. 1.....	12.00 to 13.00
Local Coke Foundry, No. 2.....	11.50 to 12.50
Local Coke Foundry, No. 3.....	11.00 to 12.00
Local Scotch, No. 1.....	12.00 to 12.50
Ohio Strong Softeners, No. 1.....	12.00 to 12.50
Southern Silvery.....	12.00 to 12.50
Southern Coke, No. 1.....	11.60 to 11.85
Southern Coke, No. 2.....	11.10 to 11.35
Southern Coke, No. 3.....	10.85 to 11.10
Southern, No. 1 Soft.....	11.60 to 11.85
Southern, No. 2 Soft.....	11.35 to 11.60
Foundry Forge.....	..... to 10.35
Gray Forge and Mottled.....	..... to 10.35
Southern Charcoal Softeners.....	11.50 to 11.85
Alabama and Georgia Car Wheel.....	15.00 to 16.00
Jackson County Silvery, according to Silico.....	12.75 to 14.50

Bessemer Pig Iron.....	11.50 to	12.00
Malleable Bessemer.....	11.50 to	12.00
Spiegeleisen, 20 per cent.,.....	..... to	30.00

Bars.—The increasing strength of the market is shown by business in Bar Iron being actually refused by mills at prices that would have been very acceptable two weeks back. Numerous orders have been placed by car works and other large consumers, the orders frequently calling for 2000 tons, while one ran up to about 4000 tons. Prices are now quite firm at 1.10c. to 1.15c., Chicago, for mill shipments of Common Iron. A heavy demand is also noted for Soft Steel Bars, with good sales at 1.15c., Chicago. The local mills will not take contracts at this price for long delivery, believing that the market will soon go higher. Considerable activity is found in Hoops, which are firmly held at 1.15c., base, Chicago, half extras, for Bands. Jobbers are firm at 1.25c. to 1.30c., full extras, for Bar Iron, 1.25c. to 1.30c., half extras, for Soft Steel Bars, and 3.10c. for Norway and Swedish.

Car Material.—An active demand is in progress for all kinds of car material, with plenty of car orders still in sight.

Structural Material.—Numerous bids are out on bridge work, aggregating at least 10,000 tons, which will soon be closed. Considerable business is also promised at an early day in contracts for new buildings. Prices are firm. Mill shipments are quoted as follows, Chicago delivery: Beams and Channels, up to 15 inches, 1.45c. to 1.50c.; 18 to 24 inches, 1.55c. to 1.60c.; Angles, 1.35c. to 1.40c.; Universal Plates, 1.40c. to 1.45c.; Tees, 1.50c. to 1.60c. Small lots from store are selling at 1.80c. to 1.90c. for Beams and Channels, 15 inches and less; 1.45c. to 1.50c. for Angles, and 1.60c. to 1.65c. for Tees.

Plates.—Eastern buyers are inquiring here for various quantities amounting to over 4000 tons. This shows that Eastern mills are unable to handle all the work now coming up. The local trade is being supplied as well as possible at old prices. Mill shipments are quoted as follows, Chicago delivery: Tank Steel, 1.30c. to 1.45c.; Flange, 1.35c. to 1.60c.; Marine, 1.60c. to 1.80c.; Common Fire Box, 1.80c. to 2c.; Best Fire Box, 2.50c. to 4c.

Merchant Pipe.—Skelp has advanced \$1 per ton, which stiffens the price of Pipe. Specifications are coming in rapidly on old contracts, while some new business is being placed. Mill shipments are as follows: Butt Weld Black, 55 per cent.; Lap Weld Black, 65 per cent.; Butt Weld Galvanized, 45 per cent.; Lap Weld Galvanized, 50 per cent., with an additional five 10's and 7½ off. Merchant Boiler Tubes are quoted at 65 and 5 per cent. off on 2 to 2¼ inch, and 70 and 5 per cent. off on 2½-inch and larger.

Sheets.—Large contracts for Black and Galvanized Sheets are being placed. Some large buyers who made contracts only a week or two back have since purchased double the quantity then ordered. Prices are firm, mill shipments of No. 27 Black Sheets being quoted at 2c. to 2.05c., Chicago, while Galvanized is now held at 80 to 80 and 5 per cent. off. Small lots of No. 27 Black are selling at 2.20c., and Galvanized at 75 and 10 and 5 to 80 per cent. off.

Merchant Steel.—The mills continue to be crowded with business, so that the small trade coming up is not causing any anxiety. Prices are advancing with the advance on Billets. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 1.60c. to 1.65c.; Smooth Finished Tire, 1.50c. to 1.55c.; Open Hearth Spring Steel, 1.65c. to 1.75c., base; Sleigh Shoe, 1.30c.; Toe Calk, 1.70c., base; Ordinary Tool Steel, 5.50c. to 7c.; Specials, 10c. and upward.

Billets and Rods.—Offers of \$22 for Open Hearth Billets have been refused by local manufacturers. They will take no more orders until the new slabbing mill gets into operation. Bessemer Billets are quoted at \$13.50 here, although small lots have brought that price at Cleveland. Wire Rods are not being offered by local producers, but sales of several lots have been made at Cleveland at \$25, which equals \$26.50 here.

Rails and Track Supplies.—Sales of several lots of Standard Sections of Steel Rails from 2000 to 5000 tons each have been made at \$20. About 1000 tons of Light Rails have also been sold at \$20 and upward, according to weight. Track Supplies are quoted as follows: Splice Bars, 1.10c.; Spikes, 1.55c. to 1.60c.; Track Bolts, with Hexagon Nuts, 1.90c. to 2c.; Square Nuts, 1.80c. to 1.90c.; Steel Links and Pins, 1.45c. to 1.50c.; Iron Links and Pins, 1.45c. to 1.50c.

Old Material.—A good demand is reported for everything in the line of Old Material. Prices are strong, but actual advances have been made in only a few instances. Bar Iron has not yet advanced enough to enable consumers to pay advanced rates. Dealers' selling quotations

are nominally as follows, per gross ton: Old Iron Rails, \$13.50; Old Steel Rails, mixed lengths, \$8 to \$8.50; selected long lengths, \$10 to \$11; Relaying Rails, \$14 to \$15; Old Car Wheels, \$12 to \$12.25; Heavy Melting Steel Scrap, \$7.75 to \$8; Mixed Steel, \$6 to \$6.50. The following selling prices are per net ton: No. 1 Railroad Wrought, \$12 to \$12.25; Dealers' Forge, \$9.25 to \$9.50; Fish Plates, \$13 to \$13.50; No. 1 Mill, \$7.50 to \$8; Heavy Cast, \$8.50 to \$8.75; Stove Plates, \$5.50 to \$5.75; Iron Car Axles, \$14.75; Horseshoes, \$9.50 to \$10; Cast Borings, \$4; Steel Axle Turnings, \$6.50; Iron Axle Turnings, \$7; Machine Shop Turnings, \$5.75 to \$6.

Metals.—Copper has continued to climb during the week, and carload lots of Lake are now quoted at 16¼c., while Western has advanced to 15¼c. Pig Lead has been fairly active, and is a little higher, being now quoted at 4.02½c. to 4.05c. Spelter is somewhat stronger and in better demand, and is now quoted 5.12½c. to 5.15c.

Tin Plate.—A very good demand is in progress, and jobbers are enjoying a decided benefit from the action of the manufacturers in turning over to them the less than carload trade. The business of this character has of late shown a steady increase.

Clark W. Harrison, Western manager of the American Pipe & Foundry Company of Chattanooga, has removed his office from Room 1125 to Room 1323 Marquette Building, Chicago. Mr. Harrison established the Western branch in October, and is in a position to secure a large share of the business of the territory.

Philadelphia.

Office of *The Iron Age*, Forrest Building, 1
PHILADELPHIA, PA., January 24, 1899.

There have been but few changes in the prices of Iron and Steel during the past week, but when they did occur they were all in one direction—viz., toward a higher level. Billets are 10c. to 15c. dearer, Plates \$1 dearer and Old Material 25c. to 50c. dearer. In other departments prices are firm and ready to move upward on very slight pressure. Producers do not appear to be making any headway against the avalanche of orders, consequently there is little or no prospect for lower prices than those now ruling. What is usually the most trying period of the whole year has been passed without the slightest sign of a reaction, and as the volume of business is maintained at its highest limit it will be no easy matter to keep prices at their present level, although it is quite certain that the large interests are not in favor of an advance at this time. New business is looming up in every direction, however, the shipyards being the largest prospective buyers during the next two or three weeks, although the car shops and locomotive works are taking in a considerable amount of material. Orders of considerable importance for locomotives for export have been placed during the past few days, but the builders decline to give particulars, which may be good policy, but is more likely to be the reverse of that, as a light cannot be hid under a bushel these days. Orders for Plates, both for Australia and the European shipyards, are drifting around, but there is very little chance of their being taken at present or in the near future. Japan sends some nice specifications for Bars which will probably be worked through, but it depends a good deal on what shipping facilities can be obtained. A summary of the week's developments seems to show, therefore, that no recessions have been made anywhere, but in nearly every article on the list prices remain firm, with a tendency toward a further advance.

Pig Iron.—The market is in a less nervous condition than it was a week ago, but it has lost none of its firmness. The diplomatic action of some of the large producers has had its effect, and consumers are not as much afraid of the market getting away from them as they were eight or ten days ago. Nobody expects lower prices, but buyers are satisfied that 25c. or 50c. advance is the very most they will be called upon to pay, and perhaps not that much if they will possess their souls in patience. Still, it is doubtful if much business could be done at inside figures, although some sellers claim that they would not think of asking more than 10c. or 15c. advance, and might take an order at the bottom figure if the buyer and delivery suited them. It is noticeable, however, that when Iron changes hands medium or outside figures are almost invariably demanded, while those who make the low quotations are very seldom in a position to make deliveries as required. Nevertheless, so long as important interests claim that they are willing to sell Mill Irons at \$10.50, No. 2 Plain at \$11 and No. 2 X Foundry at \$11.50, such quotations are entitled to a place in the list, although it is difficult to verify sales at these figures, while at 25c. to 50c. more transactions are of frequent occurrence. There need be no question as to the strength of the market, however,

and a safe range for seaboard or equivalent points of delivery would be as follows: No. 1 X Foundry, \$12.25 to \$12.50; No. 2 X Foundry, \$11.50 to \$12; No. 2 Plain, \$11 to \$11.50; Standard Mill Iron, \$10.75 to \$11; Basic, \$10.75 to \$11; Low Phosphorus, \$16 to \$16.50.

Billets.—Nothing doing of any importance. There are buyers at \$19, but sellers appear to be stubbornly firm at 10c. to 15c. more money.

Plates.—The demand for Plates shows no abatement, and although prices are about \$1 dearer, it in no way checks the ardor of buyers. Requirements are very urgent, consequently no time can be lost in dickering about prices. Mills are crowded with work, and as deliveries will soon be called for by shipbuilders and others whose orders were taken some time ago, the chances for better terms on new business are far from encouraging. To-day's prices for carload lots and upward, seaboard or equivalent points, are about as follows: Tank Plates, 1.45c. to 1.50c.; Flange, 1.60c. to 1.65c.; Fire Box, 1.85c. to 2c.

Structural Material.—There is nothing particularly important going on, although there is a pretty regular inflow of orders which keeps the mills very fully employed. The Edge Moor Iron Company secured the contract for the pier at the foot of Chestnut street, for which probably 800 to 1000 tons of material will be required. There are also several orders from the shipyards, from which source a considerable tonnage is expected in the near future, as well as from the bridge works. Prices are firm at about the following figures for seaboard deliveries: Angles, 1.35c. to 1.45c.; Beams and Channels, 1.40c. to 1.60c., according to quantity and specification.

Bars.—Business keeps up remarkably and nearly all the mills are running to their full capacity. Railroads and car builders are heavy buyers, besides which the miscellaneous demand is very large, so that there is no difficulty in maintaining prices, which for seaboard are as follows for carload lots and upward: Ordinary Bars, 1.07½c.; Refined Bars, 1.15c.; Test Bars, 1.20c.; Steel Bars, 1.20c.

Sheets.—The demand is very satisfactory and full time is being made at most of the mills. Long deliveries are quoted at a premium, but for early specifications prices for best makes are as follows (Common Sheets two-tenths to three-tenths less money): No. 10, 1.45c. to 1.55c.; No. 14, 1.65c.; No. 16, 1.75c. to 1.85c.; Nos. 18-20, 2.15c.; Nos. 21-24, 2.25c.; Nos. 26, 27, 2.35c.; No. 28, 2.45c. to 2.55c.

Old Material.—Prices are better and the demand is very active. Several thousand tons of Steel Rails sold by the Pennsylvania Railway Company went direct to consumers at a cost varying from \$11.30 to \$11.65. A lot of several hundred tons of Rail Crop Ends also sold at \$11.50, delivered. Everything is dearer, however, and revised prices for deliveries in buyers' yards would be about as follows, buyers at the inside figures and sellers at the outside: Cast Borings, \$7.75 to \$8; Wrought Turnings, \$8.75 to \$9; Machinery Cast, \$9.75 to \$10; Car Wheels, \$10.75 to \$11.25; Heavy Steel Scrap, \$11.25 to \$11.50; Steel Rails, \$11.50 to \$11.75; Iron Rails, \$13.50 to \$13.75; Choice Railway Scrap, \$13.25 to \$13.50; Iron Axles, \$15.50 to \$16; Steel Axles, \$12.50 to \$13.

Cleveland.

CLEVELAND, OHIO, January 24, 1899.

Iron Ore.—It seems now that the "wild" rate for Ore freight by water next summer will go higher than the season rate, and Ore shippers are freely contracting at 60c. from Lake Superior ports and 50c. from Lake Michigan. Unusually early as this is for chartering, it is estimated that already nearly 10,000,000 tons have had transportation provided, although the Ore has not yet been sold and Ore men are quite willing to take tonnage at the rate mentioned for all the Ore they expect to sell.

More new boat talk is in the air. The advantage for the little boats in the face of prospective additions to the fleets of high tonnage is in carrying 2000 or 3000 ton cargoes for furnaces which want to run their purchases straight to the furnace without piling on docks and are not in position to forward 6000 or 7000 ton lots. It is now believed that next summer these small vessels will be able to make some money on wild charters. The Bessemer Ore Association preliminary talk has not yet reached the discussion of prices, but predictions on the advance range from 15 to 25 cents.

Pig Iron.—The last familiar sales of Bessemer were at \$10.50, Valley furnace. Intimations of a fresh 25,000-ton transaction through the Pittsburgh agency, necessarily for scattered deliveries, are heard. Furnaces of Foundry or Bessemer refuse to promise deliveries after July 1, and contracts for Foundry running up to that time have been

closed in relatively large amounts in the past week. Would producers do so, it is believed that contracts up to July, 1900, could now be made. A large Pig Iron house with a Cleveland branch a year ago foresaw that which has now come to pass and modified its policy to the extent of accepting all furnace agencies offered, but some time since the end of the capacity string was reached. There is a possibility, almost a probability, that one of the furnaces in the Bessemer Association will withdraw entirely from Bessemer Iron production in the coming year. Basic Iron deliveries up to May are getting scarce, but some will be contracted for between that and July, when the furnacemen are ready. Some Malleable at \$10.25 and \$10.30 and some Forge at \$10 was engaged in the past week, a Forge Iron contract making an arrangement that the furnace should deliver certain odd amounts in case it should happen to be turned out.

Finished Materials.—Talk of boats to be made in Cleveland is still in the air. An order for the amount of Steel needed in a modern freighter was closed through a Cleveland office last week. Bar Iron and Bar Steel have both pushed up higher, the latter 10c. and Iron 5c. on the hundred. Where large sizes on Iron were given at 1c. Youngstown, an order to sell at 1 05c. came this week without warning, and on ordinary sizes 1 10c. out of stock is obtained.

Birmingham.

BIRMINGHAM, ALA., January 23, 1899.

The prevailing epidemic has seized upon the market and has given the grip to prices. While the market is still abed, and you often hear there is no market or it is dead, still prices are strongly in evidence that some buyers are in a "pinch" and are compelled to have Iron, regardless of price, as its real scarcity justifies the advance asked. Those who are getting it are very chary in imparting both facts and figures to your correspondent. While doubt is expressed as to the propriety of quoting the market on a basis high as \$7.50 for Gray Forge, a leak percolates through the barricade of silence erected against the insinuating gatherer of facts, and he gets information of the sale of 1000 tons of Gray Forge at \$8 for forward delivery, and with it comes the explanation that that price was made to show the buyer that the seller was not in the market. The buyer promptly accepted the price, showing he was "strictly in it" at seller's price. This sale tended to upset things, as it showed a market strength that was a surprise to sellers. If any more was sold at that price the secret has been well guarded. As the sale soon acquired publicity in Iron circles, and as that grade is scarce, it is safe to quote \$8 as the ruling price for Gray Forge. For No. 2 Foundry nothing could be learned of any sales above \$8.50. But 50c. between Gray Forge and No. 2 Foundry is too small a difference, and buyers who make it about a dollar would be apt to be nearer right. But the caution is given that the usual differences prevailing under normal conditions of the market don't exist just now, and it is simply impossible for one to guarantee the accuracy of his quotations. It is a time when each sale is "governed by circumstances."

The doings of the market are fitful. One interest report their sales for the week, in quantity, equal to the output of a month, but when you ask for prices obtained sudden deafness attacks the informant, and the corkscrew obtains no results. Another firm will tell you, We have no interest in the market, are doing nothing and are simply at present declining new business. And there is a reason for it. Lately these letters have stated that the railroads were liable to come in at any time and issue a new schedule of freight rates. This was done on Saturday last. The result is an increase of 50c. per ton on Iron shipped to points on the Mississippi and Ohio Rivers. To all points beyond the Mississippi River the increase is also 50c. per ton, but to all points north of the Ohio River it is only 40c. increase. The rate to ports of export remains unchanged and includes Charleston, Savannah, Pensacola, Mobile, New Orleans. But Iron shipped to these ports for use there pays the 50c. increase. These new rates are the same as prevailed prior to May, 1897. The same rates apply to Iron Pipe and other heavy manufactured articles. On Iron Bars the present and former rates are shown as follows (per 100 lbs.):

Place.	Former rate. Cents.	New rate. Cents.
New Orleans.....	9	11
Kansas City.....	30	35½
Cincinnati.....	10	12½
St. Louis.....	12	14½
Louisville.....	9	11½

All these rates go into effect February 6, and buyers can add the freight increase now to prevailing price to hit selling values. As this question is now settled, the furnaces "know where they are at" and we may expect more activity in sales for long forward delivery and a gradual approach to more uniformity in price.

Export freight rates the past week were the lowest of the season, and had the Iron been available the export

trade would have been heavy. But only one—possibly two—interest were in position to avail themselves of the opportunity, and the business was only fair. Stocks in Alabama for December showed a decrease of 7000 tons in warrant yards and 14,000 tons in furnace yards. Total, 21,000 tons. The condition of stocks from now on to the end of the first half of 1899 will depend upon the ability of the railroads to promptly take the Iron as offered. Shipments are yet measured by the cars offered.

There are rumors, with just enough evidence of collateral truths added to give them the stamp of positiveness, that the American Pipe & Foundry Company are being absorbed by a trust with headquarters at New York. It is known that negotiations have been in progress to fix a price for a controlling interest in the stock of the Howard-Harrison Pipe & Foundry Company; and it is known that a leading stockholder has been offered 65c for his stock and declined it. The story is that after some "dickering" with Mr. Harrison while here, he finally named a cash price at which he would unload, and, receiving in reply a request to come to New York, left here, carrying with him 95 per cent. of the stock. Now comes the information from St. Louis (Mr. H.'s home) that he unloaded at 65c. The officials so far will not confirm it, but concede the probability of its truth. It is probably true, as the fact that negotiations were going on has been an open secret for several days. The American Pipe & Foundry Company own the plants at Bessemer, Anniston, Chattanooga and South Pittsburgh, Tenn. They have \$1,500,000 bonds and \$2,000,000 stock, and since their organization, about a year ago, have declared no dividends.

At Ensley the Alabama Steel & Wire Company have let the contract for the 16 and the 12 inch Rod mill trains to the Frank-Kneeland Machine Company of Pittsburgh. Bids for the boilers and the last Rod mill engine and also for 110 nail machines are out. The work is progressing very satisfactorily. As the stockholders of the Addyston Pipe Company this week voted to issue \$300,000 stock to cover cost of plant here, we may now look for an early breaking of the ground on their part and the speedy building of the new works.

One new machine shop was added to our list the past week by local parties, mention of which will be made later on.

It is an open secret now in well informed Iron circles that one of the trusts being formed will include the rolling mill interests. And it is further known that a meeting will be held in New York City this week of the interests concerned to agree on the terms of consolidation and combination. And it is known that the plan, if successful, will absorb the rolling mills of this district. There would be no meeting unless the general plan was approved by the interests concerned, and one can safely say that it only remains to agree on the valuation of the several interests and the details inseparable from such a consolidation of interests to perfect another trust that, springing forth full armed, will enter the contest for success. "The combat deepens," and it looks as if absorption is the ruling spirit in business as well as in colonies.

St. Louis. (By Telegraph.)

Office of The Iron Age, 512 Commercial Building, }
ST. LOUIS, January 25, 1899. }

Pig Iron.—As the days go by and foundrymen's wants are placed before furnace representatives a confirmation of the scarcity of Pig Iron is had in the inability to have these wants fully satisfied. Furthermore the Iron is being consumed and not unnaturally stored, as a visit to a number of our local foundries develops the fact that they are not provided with much more than the average stock to draw upon. There is some Iron for prompt delivery to be had, and orders during the week for as much as 1000 tons each have been accepted at the higher market prices. A slight advance is noted in several grades of Iron this week, and as Southern railroad rates will be advanced 50c. per ton on February 6, prices after that date will bear that increase, with a possibility of the furnaces making an additional advance. This increase in freight rates will make the tariff equal that in force prior to May, 1897, and contrary to former practice the rates will apply to all shipments made after February 6, as the railroads have shut out any such thing as the basing of charges on old rates on such Iron contracts as might have been closed previous to the date of new rate. We quote as follows for cash, f.o.b. cars at St. Louis:

Southern, No. 1 Foundry.....	\$11.50 to \$11.75
Southern, No. 2 Foundry.....	11.00 to 11.25
Southern, No. 3 Foundry.....	10.25 to 10.75
No. 1 Soft.....	11.25 to 11.75
No. 2 Soft.....	11.00 to 11.25
Gray Forge.....	10.25 to 10.75
Mottled.....	10.00 to 10.25

Bar Iron.—Trade in Bar Iron is keeping up finely, and prices are firmly adhered to by the mills. A singular

disposition is manifested by some of the smaller jobbers in their failure to take advanced profits on such material which they may have bought before the rise. It is safe to say that they could not replace stock at the old figures, and if there is any doubt as to this in their minds, the actual condition will be presented to them when they do replenish stock. Mills quote 1.15c. for carload lots, half extras, and jobbers quote 1.25c. for carloads. Small lots from stock are quoted at 1.35c.

Rails and Track Supplies.—The extent of railroad extensions and roadbed improvements on existing lines contemplated for this year promises to make 1899 a memorable one. Securities are being more freely dealt in, and consequently Rail manufacturers and contractors are meeting with encouraging requests for estimates on projected betterments. The inquiry for heavy and also light sections of New Rails is exceedingly good, and there is nothing now to indicate that any abandonment of enterprises is likely to arise. Prices on Track and Rail Supplies are as follows: Splice Bars, 1.10c. to 1.20c.; Track Bolts, with Hexagon Nuts, 1.90c.; with Square Nuts, 1.80c.; Iron Links and Pins, 1.55c.; Steel, 1.55c. to 1.60c.; Spikes, 1.60c.

Old Material.—As the prices of other metal lines advance more determination to hold Old Material for better prices is noted. No fixed prices can be quoted, but nominal quotations on Old Iron Rails are \$12.20 to \$12.75. Steel Rails are about \$9, and Car Wheels from \$12 to \$12.75 per ton.

Sheets.—A increase in the price of Black Iron has not caused any curtailment of orders, and as in almost every other Iron line the quotations are made for prompt acceptance only. Mills are not inclined to deal in futures, and prefer to follow the market, which is all upward. Mill shipments are now quoted at 2.10c. to 2.15c., St. Louis, on No. 27 Common Black. Galvanized discounts are reduced to 80 and 5 to 80 and 7½ per cent. off list.

Pig Lead.—The market is firm at 4.05c. bid. While some regular customers are being supplied, the refiners in the long run discourage inquiries for heavy or extended time deliveries.

Spelter.—Prices of Zinc Ore are being gradually increased, and late sales were noted at \$33.50 per ton. Its effect is being felt on the Spelter market, which can be quoted steady at 5.15c.

*The Hoyt Metal Company, St. Louis, have recently opened a suite of offices in the Fullerton Building, this city.

Cincinnati. (By Telegraph.)

Office of The Iron Age, Fifth and Main streets, }
CINCINNATI, January 25, 1899. }

While it can be truly said that there is no radical change in the conditions surrounding the Pig Iron market from those which ruled last week, yet it is also true that agents handling Southern Iron are about as badly demoralized as they have been for a long day. To begin with, Iron, both North and South, is still scarce, and at the prevailing figures of a week ago it was much harder to find a seller than a buyer. The buyers are still wanting Iron, but all but the hungriest have received a backset from which they have not as yet had time to recover. Southern furnaces continue to advance their prices, and in addition the railroads have restored the old tariff, which adds 50c. to Ohio River points and 40c. to all points further North. The leading Southern furnace interest advanced most grades 25c. last week, which added to the increased freight charges makes an advance which is throwing business to Northern furnaces more decidedly than before. The freight advance is operative February 6, and is to affect all Iron contracts for after January 23. There has been a fair lot of business during the past week, chiefly in small and medium orders, however. It will be two or three weeks, perhaps, until matters settle sufficiently to tell just where the business stands. Quotations f.o.b. Cincinnati are as follows:

Southern Coke, No. 1.....	\$11.00 to \$11.50
Southern Coke, No. 2.....	10.75 to 11.25
Southern Coke, No. 3.....	10.25 to 10.75
Southern Coke, No. 1 Soft.....	11.00 to 11.50
Southern Coke, No. 2 Soft.....	10.75 to 11.25
Southern Coke, Gray Forge	10.00 to 10.50
Southern Coke, Mottled.....	10.00 to 10.50
Ohio Silvery, No. 1.....	12.50 to 12.75
Ohio Silvery, No. 2.....	12.00 to 12.25
Lake Superior Coke, No. 1.....	11.50 to 11.75
Lake Superior Coke, No. 2.....	11.00 to 11.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$14.75 to \$15.25
Lake Superior Car Wheel and Malleable..	13.50 to 14.00

Plates and Bars.—Local mills report new business as brisk, and no difficulty in maintaining quotations.

Market is strong on last week's basis. We quote, f.o.b. Cincinnati: Bars, wholesale, 1.20c. to 1.25c., with half extras; Bars, retail, 1.35c. to 1.50c., with full extras; Plates, wholesale, 1.45c. to 1.55c.; Bar Angles, 1.25c. to 1.40c.; Sheets, No. 27, 2.10c.; Sheets, No. 10, 1.70c.

Old Material.—There is some pressure to sell in some quarters, and trading has been quiet. We quote, f.o.b. Cincinnati, buying prices: No. 1 Wrought Railroad Scrap, \$10.50 to \$10.75; Cast Scrap, \$7.50 to \$8; Car Wheels, \$10.25 to \$10.50; Iron Axles, \$14.50 to \$15; Iron Rails, \$12 to \$12.25; Steel Rails, \$8.50 to \$8.75.

Pittsburgh.

Office of The Iron Age, Hamilton Building, }
PITTSBURGH, January 25, 1899. }

(By Telegraph.)

Pig Iron.—The condition of the Bessemer Pig Iron market can be summed up in three words, "Quiet but strong." The large consumers of Bessemer Pig are pretty well covered for some time, while the furnaces are sold up for several months. The price is strong at \$10.50, Valley furnace, for delivery through first half of the year. There is a scarcity of Gray Forge, both in the Valley districts and in Pittsburgh, and prices are higher and very firm. It has sold at \$10, Valley furnace, and is strong at that price in the Pittsburgh district. Foundry Irons are in better inquiry and stronger in price. We quote Bessemer Pig at \$10.50, Valley furnace; Gray Forge, \$10, Valley furnace; No. 1 Foundry, \$11 to \$11.25; No. 2 Foundry, \$10.50 to \$10.75; Gray Forge, \$10 to \$10.15; Bessemer, \$11 to \$11.15, all f.o.b. Pittsburgh district. We note a sale of 2000 tons of Bessemer at \$10.50, Valley furnace, for April, May and June; also 1500 tons of Gray Forge at \$10, delivered in Pittsburgh district. Two or three inquiries for Gray Forge are in the market. We note a sale of 500 tons of Bessemer Iron for prompt delivery at \$11, delivered in the Pittsburgh district.

Billets.—The Steel market is very active and prices are higher. Eastern buyers have placed a good deal of tonnage for delivery in the next two or three months at prices ranging from \$16.75 up to \$17.15, maker's mill, Pittsburgh or Wheeling district. Billets for delivery in the next two or three months are selling at a lower price than would be accepted for prompt Steel. We note three or four sales of Steel for shipment this month, aggregating about 1500 tons, at \$17.50, delivered in Pittsburgh district, equal to \$17.25 to \$17.35, maker's mill. The Steel mills are all well filled up with specifications and apparently not anxious just now to book additional tonnage.

Sheet Bars.—Reliable information is that a deal has been effected by which five of the leading Sheet Bar mills are to be taken over by one company, presumably closely affiliated with the American Tin Plate Company. A leading mill in the Pittsburgh district and one in the Wheeling district are understood to be included in this consolidation, but it is stated that working arrangements have been made with both of these concerns by which their product of Tin Bars will be sold only to Tin Plate mills owned and controlled by the American Tin Plate Company. The immediate result of this consolidation is that the product of the mills rolling Tin Bars has practically been secured to the Tin Plate interest and will do much to discourage new Tin Plate enterprises. We are not advised of any recent sales of Sheet Bars and quote nominally at \$17.75 to \$18, maker's mill.

Rails.—The local mill is reported to have secured an order for 30,000 tons of Rails from the Colorado, Texas & Mexico Railroad. We are advised that the minimum price of Steam Rails, standard sections, is \$19, maker's mill.

Spelter.—The market is higher and prime Western grades of Spelter are quoted this morning at 5.40c., Pittsburgh. Still higher prices before the week is out are predicted.

(By Mail.)

The whole Iron trade is active and prices are strong and advancing. Buyers are thoroughly alive to the situation and are covering their requirements as fast as possible. Since our last report Billets have sold at \$17.50, delivered in Pittsburgh district, for prompt shipment. Plates show no cessation in activity, and it is no longer a question of price, but where to get deliveries. Tank Plate has sold for early delivery up to 1.40c., Pittsburgh. Steel Bars are very firm, with some mills quoting at 1.10c. There has been a heavy tonnage also in Sheets, and the market is strong at 2c. minimum for No. 28. Heavy orders for cars are being placed by the railroads, the Baltimore & Ohio having contracts with the Pressed Steel Car Company of this city for 5000 Steel cars. The situation could hardly be more active than it is, and still higher prices on nearly all kinds of Iron and Steel products are practically certain. In the week the American Steel & Wire Company have made another advance of \$1 a ton on Wire and Wire Nails, and are in complete control of these trades. Reports of deals involving the purchase of a number of large Steel plants are going, but have not been verified. In the case of one large Steel plant outside the Pittsburgh district it is understood a meeting is being held in New York to-day, which may result in the transfer of that plant to other parties. Active progress is being made in the deal by which the National Pipe Company will take over the principal Pipe mills. It is also likely that work will be commenced in a few days on the deal by which the Western Sheet mills are to be taken over by one company, on much the same lines as the American Tin Plate Company secured control of the Tin Plate mills.

Structural Material.—Among contracts to be placed this week is considerable bridge work for St. Thomas, Ontario, Canada. While no specially large contracts have recently been placed, the tonnage in small lots is sufficient to keep the mills well filled up. We quote as follows: Beams and Channels, 15 inch and under, 1.30c.; 18, 20 and 24 inch, 1.40c.; Tees, 1.35c.; Angles, 1.20c.; Zees, 1.30c., all f.o.b. Pittsburgh.

Plates.—In the Plate trade it is no longer a question of price, but where to get the material. In the past week Pittsburgh mills have turned away contracts for 12,000 to 15,000 tons of Plates, being utterly unable to make the deliveries. All the local mills are filled up for periods ranging from two months to three or four months. The leading producer is rushing work on the new Plate mills as fast as possible. We are advised that Tank Steel for prompt delivery has sold up to 1.40c. at mill. We quote Tank, ¼-inch and heavier, at 1.35c. to 1.40c.; Flange, 1.45c. to 1.50c.; Marine, 1.55c. to 1.60c.; Locomotive Fire Box, 2.75c.; Ordinary Fire Box, 1.75c. to 1.80c.

Ferromanganese.—We quote domestic Ferro at \$50 in large lots and \$52.50 in small lots. We quote Spiegel at \$28, delivered.

Sheets.—The Sheet trade is very much better both in demand and price. In the past week a heavy tonnage has been taken by the mills, deliveries running over the next four to six months, and buyers would place, if the mills would accept the business, enough orders to keep most of the mills busy for the balance of the year. One authority states that in the last week fully 10,000 tons of Sheets have been placed, but the amount is hardly so large. Prices are higher and very strong. We quote No. 27 Black Sheets, box annealed, at 1.95c.; No. 28, 3c. at mill. These prices, we are advised, are minimum, and are made only on large lots. Still higher prices for Black Sheets in the near future are probable. Prices on Galvanized Sheets are also firmer and a good deal of tonnage is being placed. We quote at 80 and 5 to 80 and 7½ per cent. in carload lots, usual freight allowance.

Spelter.—The market has been about stationary since our last report. We quote at 5.30c. to 5.32½c., Pittsburgh, for prime Western grades.

Merchant Steel.—A good deal of tonnage is being placed, and, with specifications on old contracts, mills are full of work, and somewhat behind in deliveries. The tone of the market is strong, and on certain kinds of material some of the mills have made a sharp advance in prices. We quote: Tire Steel, 3 16 to ¾ inch and heavier, 1.20c. to 1.25c.; Toe Calk, 1.30c. to 1.35c.; Plow Slabs, 3 16 inch and lighter, 1.30c. to 1.35c.; Spring Steel, 1.30c. to 1.40c., depending on quality; Machinery Steel, 1.80c. to 1.35c.; Cutter Shoes, 2.15c. to 2.25c.; Rolled Lay Steel, 2½c.; Hammered Lay Steel, 2¾c.; Cant Hook Steel, Open Hearth, 2½c.; Crucible, 3c.; Tool Steel, ordinary grades, 4¾c. to 6c.; extra grades, 9c. and upward, all 60 days or 2 per cent. off for cash.

Iron and Steel Skelp.—The Skelp market is very active and prices are higher. The Pipe mills are filled to the guards with tonnage, and are placing heavy orders for Skelp, local mills having all the tonnage they can take care of for a considerable time to come. Eastern mills,

which often sell in this market, are also filled up for the next two or three months. Prices are a good deal higher, and we quote: Grooved Steel Skelp, 1.05c. to 1.07½c.; Sheared Steel Skelp, owing to the filled up condition of the Plate mills, is very active and much higher, and is quoted at 1.25c. to 1.30c.; Grooved Iron Skelp, 1.20c. to 1.25c.; Sheared Iron Skelp, 1.35c. to 1.40c. We note a sale of 500 tons of Grooved Iron Skelp, ordinary widths, at 1.20c., f.o.b. Pittsburgh.

Pipes and Tubes.—The Pipe trade is in the same condition as noted in this report for a good many weeks past. The mills are all full of work and behind in deliveries. There is a good deal of complaint from customers who are unable to obtain material as fast as they need it. The tone of the market is strong, and additional strength is given it by reason of the fact that the negotiations for the control of the Pipe trade by one company are understood to be making favorable progress. We quote Merchant Pipe as follows: Butt Black, 55 per cent.; Lap Black, 65 per cent.; Butt Galvanized, 45 per cent.; Lap Galvanized, 50 per cent. Additional discounts are five 10's and 7½ per cent. for small lots, and five 10's and 7½ and 5 per cent. on carloads. Oil country goods are very active and established prices are being rigidly held. We quote Screw and Socket Joint Casing at 60 and 10 per cent.; Inserted Joint, 60 per cent., with an additional discount of 2½ per cent. to dealers. Prices on Boiler Tubes are very firm, and it is not improbable will be advanced before long. We quote 1½-inch and smaller at 60 and 5 per cent.; 1¾, 2 and 2½ inch, 72½ and 5 per cent., and 2½-inch and larger, 75 and 5 per cent.

Connellsville Coke.—Last week there were 14,864 ovens in the Connellsville region active, the output being 155,069 tons. The Coke trade is very active, demand for both Furnace and Foundry being heavy, and prices are firm. We quote strictly Connellsville Furnace Coke at \$1.60 and Foundry Coke at \$1.90 to \$2.30, in tons of 2000 pounds, at oven.

The American Tin Plate Company have opened an office in Room 307, Lewis Block, Pittsburgh, Pa., with Berthold Goldsmith as manager Eastern district.

The German Iron Market.

ESSEN, GERMANY, January 6, 1899.—For the German Iron and Steel industry the year 1898 closed under conditions very different from those under which it began. Then the Iron markets were depressed, and owing to the fact that buyers held back they receded, so that there were anxious times for the syndicates. Since spring the market improved, first slowly and then more rapidly, until conditions developed which may not justly be referred to as thoroughly and generally satisfactory. The prospects for the continuation of this state of affairs are shown best from the fact that in an entire series of branches of the trade capacity is engaged at good prices until the end of 1899. The profits of many of the works threaten to be adversely influenced by the continued scarcity of fuel and raw material, there having developed lately a scarcity of Pig Iron. The Coal famine has grown worse, and Coking Coals are so scarce at some of the furnaces that they cannot be driven up to capacity. The inadequate and irregular supplies of Gas and Heating Coals has rapidly forced Puddling and Steel mills to slacken up.

There have been very few changes in the Siegen Iron Ore industry since the last report. Business is slow because all the furnaces have covered their requirements to the end of September, and because the Selling Association is holding back with offers beyond October 1 in order to await market developments. The mines are straining their output in order to meet their engagements.

The Pig Iron market is exceedingly firm, and the furnaces, hampered by scarcity of Coke, do not produce enough to meet the demand of buyers. The aggregate orders of the Rhenish-Westphalian Pig Iron Syndicate have reached such a magnitude that 40,000 to 50,000 tons of orders had to be turned over to the Siegen Luxemburg Syndicate. Prices have undergone some changes since our last report, the quotations now being: Spiegeleisen, 67 to 68 marks; No. 1 Mill Iron, 58 to 60 marks, f.o.b. Siegen; German Bessemer Pig, at furnace, 68 marks; Thomas Pig, delivered at Steel works, 60 marks; Luxemburg Mill Iron, f.o.b. furnace, 52 marks; No. 3 Luxemburg Foundry, 53 marks; German No. 1 Foundry, 68 marks; and No. 3 Foundry, 63 marks f.o.b. furnace. The Billet market is in a brilliant condition. The greater number of the Steel works have sold their production to the end of the year without being able to cover the requirements of buyers, and prices have advanced to 92 marks for Blooms, 97 marks for Billets, 100 marks for Slabs, all Basic Bessemer Steel, f.o.b. Dortmund, Ruhrort, Rothe, Erde or Diedenhofen, Open Hearth Metal being quoted 5 to 6 marks more. For urgent deliveries Billets have sold as high as 105 marks per ton. The

scarcity of Steel and the difficulties to the rolling mills in obtaining a regular supply continue, but in spring a large new Steel works in the Saar district, with a very large output, will enter the market, and this is likely to help the situation. There is scarcity, too, in Muck Bars, and orders cannot be placed at less than 97 marks for Rhenish-Westphalian Muck Bar.

In Old Material prices have risen further, the demand having increased as a substitute for Muck Bar. Old Iron Ties, Rails and Fastenings are in demand and are sold at higher prices. Old Rails are quoted 90 marks; Ties, 86 to 87 marks; Angle Bars, 85 to 86 marks. These quotations are f.o.b. mill.

The upward tendency is very much pronounced in Rolled Iron Material. The prices realized for Iron Bars are very remunerative, the demand is active and the works are firm at the advanced prices. Long deliveries are generally demanded, and even for good specifications seven to eight weeks' time is demanded. Steel Bars are 125 marks; Open Hearth Bars, 135 marks; Iron Bars, 140 marks; Angles, 150 marks; Rivet Iron, 150 marks, and Boiler and Structural Rivets, 205 marks. Mills rolling Hoops and Bands quote 135 to 137.50 marks, and are heavily engaged. Beams are quoted 108 marks, f.o.b. Burbach, business being very active. Since the mild winter has caused little suspension in building the works have been unable to accumulate much stock for spring requirements, so that there is danger that in a few months there will be a marked scarcity in the Beam market. Sheets are very firm and the mills are amply supplied with orders, Steel Sheets being quoted 145 marks.

Under the operation of the syndicate good prices are obtained in the Plate market; even outsiders do not quote much below official prices, and only then when it is a question of putting their business under any circumstances. Open Hearth Boiler Plates are quoted 160 marks, f.o.b. Dortmund; Iron Boiler Plates, 190 marks; Flange, 220 marks; Fire Box, 250 marks; Open Hearth Tank, 142.50; Basic Bessemer Tank, 137.50, the average time of delivery being five to six weeks.

The future seems less favorable to the Merchant Pipe mills. This is due less to the competition of the American works than it is to the struggle among the German mills themselves, who have depressed prices. In addition to this there is a scarcity in Skelp and prices are high in this branch.

The State railroads have lately ordered very considerable quantities of Rails and other Track Material. At the present time negotiations are under way for the renewal of the three year Rail and Tie contracts with the Prussian railroads, the old one expiring on March 31 of this year. The last base price was 107 marks per ton for Rails. According to a telegram received this evening from Berlin it is probable that a new contract will be closed for five years and that the base price will be 115 to 116 marks. The decision of the Minister of Prussian Roads is expected in the next few days.

There are a considerable number of inquiries for Wire Rods beyond the second quarter, but the syndicate is holding back in its sales, since it is difficult to cover for Billets. The position of the Wire mills has improved since the syndicate have begun work, but irregular and inadequate deliveries of Billets and of Coal are disturbing the running of the works. The Wire Nail trade has also improved.

The car shops are again expecting large orders from the State railroads, and negotiations are reported to be near closing. The syndicate of the locomotive builders, which was to expire by limitation in March of this year, was during the last week extended for five years more under unchanged conditions. The Prussian State Railroads have lately ordered 550 locomotives.

The bridge shops, machine shops and boiler works are enjoying exceptionally favorable conditions. Boiler makers demand four months' time and the machine shops 6 to 12 months. The market for Cast Iron Pipe for gas and water lines is in an excellent condition and prices are rising.

New York.

Office of The Iron Age, 232-238 William street, {
NEW YORK, January 25, 1899. }

Pig Iron.—The local market has been quite active, quite a number of round lots having been placed during the week. It is noted that even the small buyers are now trying to extend their purchases. The inquiries from foreign sources continue numerous and large. We understand that some important transactions for delivery during the second half of 1899 have been closed. As yet no announcement of an advance in freight rates from Southern furnaces to this territory has been made. We quote, at tidewater: No. 1 X Foundry, \$12; No. 2 X, \$11.50; No. 2 Soft, \$11.25; No. 2 Plain, \$11; No. 3 Foundry, \$10.75, and Gray Forge, \$10.50. Southern brands, tidewater delivery, are nominally: No. 1, \$11.25 to \$11.50; No. 2, \$11 to \$11.25; No. 1 Soft, \$11 to \$11.25;

No. 2, \$10.75 to \$11; Gray Forge, \$10; Basic, \$10.75 to \$11.

Cast Iron Pipe.—A number of meetings of those interested in the organization of a large consolidation have taken place. Options on a number of plants have been secured, but as yet negotiations are not quite concluded. No large orders are in the market. The Boston contract is to be awarded to-day. The makers of Soil Pipe are trying to arrange a consolidation.

Steel Rails.—The market is firm but quiet, no large transactions having been closed by Eastern mills. For large lines of Standard Rails the market is \$19, while for small lots \$20 is demanded and is obtained.

Finished Iron and Steel.—In Structural Material for buildings no large transactions are yet reported. There is a good deal of inquiry from all parts of the world for bridge work, among the contracts in the market being large structures for Russia, Egypt, South Africa and Australia. Apparently the European shops are overloaded with work, but to our builders the most serious drawback is the difficulty in securing vessel room. We quote for large lots on dock: Beams, 1.40c. to 1.50c.; Angles, 1.30c. to 1.35c.; Universal Mill Plates, 1.30c.; Tees, 1.45c. to 1.50c.; Channels, 1.35c. to 1.45c.; Steel Plates are 1.35c. to 1.40c. for Tank, 1.40c. to 1.45c. for Shell, 1.45c. to 1.50c. for Flange, 1.70c. to 1.75c. for Fire Box, and 2.25c. to 2.50c. for Locomotive Fire Box, on dock. Charcoal Plates are 2.25c. for Shell, 2.75c. for Flange, and $\frac{1}{2}$ c. advance for Fire Box quality. Refined Bars are 1.15c. to 1.20c., and Common Bars are 1.10c. to 1.12 $\frac{1}{2}$ c., on dock. Soft Steel Bars, 1.10c. to 1.20c.; Steel Axles, 1.40c. to 1.50c.; Scrap Axles, 1.50c. to 1.70c.; Links and Pins, 1.50c. to 1.60c.; Hoops, 1.17 $\frac{1}{2}$ c. to 1.20c.; Best Iron Boiler Rivets, 2.25c. to 2.50c., delivered; Steel Structural Rivets, 1.75c. to 1.85c.; Cotton Ties, 60c. to 65c. per bundle at mill.

A. R. Whitney & Co. have taken offices on the sixth floor of the Empire Building, which they will occupy on or about March 1.

The Colorado Fuel & Iron Company have established an office in the Empire Building, in charge of Robert F. Welborn.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street, }
NEW YORK, January 25, 1899. }

The week has been an active one in machine tool circles. Not that there have been many transactions of especial importance, but the activity in general inquiry continues in a very fair way. Representatives of the trade report that a good portion of the inquiries which have been circulating for some weeks have been closed up. Prices, however, are not yet sufficiently strong to please most machinery merchants. Manufacturers and dealers in special tools report a very healthy state of affairs. This branch of the trade is doubtless in a most satisfactory condition. We know of several shops in this vicinity which have very recently made good sized installations of this class of tools, and then there is one feature which is very advantageous to all who handle them in the fact that their prices are not subject to the fluctuations of the general market to the extent of the ordinary shop tools. This class of machinery is installed with a view of economy in production, and as the field in each line is rather limited competition is almost eliminated, and the manufacturers can hold out for good prices. A very good business is being done in these lines by the Jones & Lamson Machine Company and by the Gisholt Machine Company. The Bullard Machine Tool Company of Bridgeport, Conn., are doing a large trade in their special tools. In fact, their business has increased to such proportions that a large addition is now being erected in addition to the new erecting shop which was recently built to the works. The new addition is of the single story type, with side galleries and traveling crane traversing the entire building. We understand also that a nice order has been given out by this company for large tools to be installed in the new addition. The building will be used for the erection of heavy tools.

We are informed that the New Jersey Dry Dock Company of Elizabeth, N. J., who have been on the market for some time, have concluded their purchasing. A large amount of machine tools was bought, and it is said that the greater portion of it was awarded to the Niles Tool Works Company.

A new company have just been formed in Berlin, under the style of the Deutsche Babcock & Wilcox Dampfkesselwerke Gesellschaft. The purpose of the company is to manufacture water tube boilers of the Babcock & Wilcox type. The company are capitalized at \$500,000. We are informed by E. H. Wells of the Babcock & Wilcox Company, 29 Cortlandt street, New York, that the entire affair is being engineered by the Babcock & Wil-

cox Company, Limited, of London, and that if purchases will be made of American equipment, as there doubtless will, they will be made either by the English company or the new German company direct.

A communication which we have received from the Morgan Engineering Company contains the following:

"We have found it expedient and to the advantage of our customers to sell our product direct and not through agencies. We have, therefore, terminated the agreement existing between the Niles Tool Works Company and ourselves, and until further notice all communications should be directed to the home office, Alliance, Ohio, where we have an able corps of representatives ready to give you immediate attention."

The Chihuahua & Pacific Railroad Company, whose New York offices are at 80 Broadway, are negotiating for the purchase of a 16 horse-power hoisting engine, a derrick and a complete equipment of bridge building tools. This company have just awarded a contract for eight large gasoline engines to White & Middleton of Baltimore, and a contract for eight triplex pumps to the Goulds Mfg. Company of Seneca Falls. The material is all for shipment to Mexico.

At the Eastern office of the Pelton Water Wheel Company, 143 Liberty street, orders have been received for 100 tons of steel cyanide tanks and 3500 feet of 12-inch heavy pressure piping for shipment to South Africa; half of the power plant equipment of the Portezuelo Electric Power Company of Puebla, Mexico, including a 2500 horse-power water wheel and 300 tons of steel pipe, and for similar material for Colombia, Peru and Norway.

The Stirling Water Tube Boiler Company of 95 Liberty street received an order from Bishop & Babcock of Cleveland, Ohio, for boilers and tanks to be used in the erection of a carbonated water plant at Jersey City, N. J. The Stirling Company were also awarded the contract for the cotton compress by the Norfolk Warehouse Company of Norfolk, Va., and for the boiler plant, which is to be erected by the Delaware Electric Light & Power & Railroad Company of Sydney, N. Y.

The contract for the pumping machinery to be used in connection with the hydraulic elevator service in the Bourne Building, 85 Liberty street, was awarded to Henry R. Worthington.

The Buffalo Forge Company of 26 Cortlandt street were awarded the contract for the heating of the Webster School, Waterbury, Conn., through the Barlowe Bros. Company of Waterbury. The contract for the four-high speed engines to be used for lighting purposes in various New York schools was also awarded to the Buffalo Forge Company.

The contract for the two large engines to be operated at the new works of the Alabama Steel & Wire Company, at Birmingham, Ala., was awarded to the E. P. Allis Company. One of the engines is to be of 3000 horse-power and the other 1500 horse-power.

Work has been commenced on the erection of the new machine shop for the Harrisburg Foundry & Machine Works, at Harrisburg, Pa. The contract for the erection of the steel frame of the building has been awarded to John B. Frain of Harrisburg. It is stated that the new shop will cost \$200,000. A considerable amount of new machinery will doubtless be installed.

Extensive improvements are being made to the plant of the Beaumont Iron Works of Houston, Texas. Five large planers have just been ordered by the company.

A contract for four boilers was awarded to Wickes Bros. of Saginaw, Mich., by the Water Board of Detroit, Mich. The amount of the contract for the four boilers, equipped with Murphy stokers, was \$13,977. Other bids were: Cahall Sales Department, \$16,355; Cassius C. Peck, Rochester, N. Y., \$14,425; Babcock & Wilcox, New York, \$22,500.

The Pennsylvania Steel Company were the lowest bidders for the New Orleans dry dock. Their bid was \$810,000, which is \$40,000 below the maximum price fixed by the Government. The contract has not yet been awarded. This company were also awarded the contract for 2000 28-foot steel poles to be used by a Mexican electrical railway.

The Riter-Conley Mfg. Company of Pittsburgh and 39 and 41 Cortlandt street, New York, have received an order for three steel cyanide tanks from the Mexican Mining Company of Mapimi, Mexico. The tanks are each to be 116 feet in diameter and 12 feet high, each to be built of $\frac{1}{4}$ -inch plates.

M. J. Martinez has received the appointment as resident agent at Havana, Cuba, for the Hancock Inspirator Company of Boston, manufacturers of injectors, ejectors, general jet apparatus and specialties for steam, water air and gas.

An office has been opened at 55-97 Liberty street by the American Engine Company of Bound Brook, N. J. Edwin S. Boyer is in charge.

Burham & Granger have removed from 136 Liberty street to the White Building, 95-97 Liberty street. They

are now handling the lines of the Stearns Mfg. Company, Union Iron Works, Philadelphia Engineering Works, Harrisburg Mfg. & Boiler Company and the American Fire Engine Company.

The New York offices of the Stirling Water Tube Boiler Company have been removed to 95-97 Liberty street.

The Boston Machinery Market.

Office of *The Iron Age*, 33 Mason Building, }
BOSTON, January 23, 1899. }

There has been little, if any, abatement in the New England market in the activity of trade. A few houses report matters a little quieter for the time being, but do not consider this in any sense a damper upon their enthusiasm. They are just as confident that there is plenty of business in prospect as they ever were, and look for an unusual record in the year 1899. Many of the handlers of machine tools say they are away behind on orders and cannot hope to catch up for some time to come. In construction work a similar story is told. Important public contracts, notably the new bridge between Boston and the Charlestown district, have been delayed several weeks by lack of material, but recent arrivals of steel work for this structure will enable the contractors to push matters more rapidly from now on. A move which may result in changes in all the bridges across the Charles River has been made lately by citizens of both Cambridge and Boston who are interested in the Park system of the two cities along the river front. The War Department of the National Government has been petitioned to permit the construction of the proposed West Boston bridge to Cambridge, for which plans and appropriations have been made, without a draw. The ultimate object of the promoters of this matter is to close the river to navigation of the larger class and devote it entirely to pleasure craft. Seldom is such a proposition brought forward for so large a waterway, but it meets with favor in both cities. A public hearing was given by the engineer department January 19 in this city, and the only objectors were a few business firms with wharf privileges on the river banks.

In connection with the proposed new dry dock for the Boston Navy Yard it is announced that the Fitchburg Railroad corporation has made the Government an offer of cession of land adjacent to the Navy Yard property at the Hoosac Tunnel docks, so-called, provided the Government will allow the railroad company to share in the use of the dock. This offer if accepted would cause material changes in the plans as reported in a previous issue. The company propose to build the masonry wall on the side of the dock adjoining their premises and to excavate the entire area of the dock. Admiral Belknap and the board detailed to look into the coaling station system along the coast, of which he is presiding officer, have reported favorably upon the project and recommend also that coal handling machinery and pockets to hold 15,000 tons of coal be built on the easterly side of the slip. Secretary Long has appointed January 25 as the date of a hearing on the subject. The State of Massachusetts is an owner in the Fitchburg Railroad, and the proposition derives its principal impetus from the backing that the authorities here are giving to it.

A trial of the 19 elevators in the South Union Station was made last Friday and Saturday, January 20 and 21. Seven of them are passenger lifts and the other 12 are for merchandise and general baggage. Most of the latter are 6 x 15 feet in dimensions, and have a capacity of upward of 4000 pounds. They run only one flight. Three of the passenger elevators travel five stories in the office portion of the structure and one runs six flights, starting from the basement. The Metropolitan Electric Construction Company have the contract for their installation, and they are run by Sprague motors, which derive their power from the station's own power plant.

The Walworth Construction & Supply Company have the contract for piping and fitting in connection with the extensive changes under way at the Lancaster mills in Clinton, Mass. The Metropolitan Water Board, by taking certain watersheds throughout that section of the State, has deprived the mills of their water power. They are, therefore, replacing this with other power. Lockwood, Green & Co. designed the outfit, and they are installing the Cahall vertical tube boilers, and a Cooper Corliss engine of 1900 horse-power, directly connected to General Electric motor arrangements for each mill building. Further improvements and additions are in view for the same plant during the current year.

At the Beverly gas and electric light plant additions are going into the equipment, and for this and the new Medfield, Mass., electric light plant, the Walworth Construction & Supply Company are to put in the piping and fittings, and in the latter plant the pumps, condensers and heaters. Kendall & Sons of Cambridge furnish the boilers on the Medfield work.

Charles A. Schieren & Co.'s Boston office reports a good demand at present for belting. They are putting in the belt transmission at the Boston Navy Yard in connection with the new ropewalk outfit there.

Lots of inquiries for small lathes and other light tools are reported by the Boston representatives of the Niles Tool Works Company. They have been shipping some small stuff lately to New Brunswick. Recent sales include a number of machines to go to Fitchburg, Mass., where the C. H. Cowdrey Machine Company are increasing their equipment on account of Government contracts secured.

Mossberg & Granville Mfg. Company of Providence have been in the market here lately for a number of machines, most of them screw machines, to go to England.

The Eaton Motor Carriage Company have been incorporated in Maine, by Boston men, to manufacture motor carriages. The authorized stock issue is \$500,000. Paul Askenasy and A. M. Sheehan are named as the incorporators.

The Boston Bridge Works have the sub-contract for the elevated track structure on the new Charlestown Bridge from the Carnegie Steel Company.

The Philadelphia Machinery Market.

Office of *The Iron Age*, Forrest Building, }
PHILADELPHIA, PA., January 23, 1899. }

The market is practically in the same condition as reported a month ago. Plenty of new business has been secured during the month, and the filling of order books goes on with vigor. Most of the new business booked is for home requirements, the home demand having improved very much since the opening of the year. This improvement more than offsets a little falling off in the foreign demand, which demand, however, is still quite heavy. The remote deliveries which most builders are now compelled to name in estimating on large machine tools act somewhat as a check to foreign buyers of heavy tools. The bookings for heavy tools cover deliveries all the way from 5 to 18 months from dates of contracts, and the minimum of time mentioned does not cover anything like a majority of the transactions closed. Foreign negotiations are, in nearly every case, closed by cable, thus denoting the strong desire to save even a week's time in a transaction.

With an improvement in the home demand some improvement in prices is expected. Although quotations are very firm, instances of advances in the prices of standard machinery obtained are not common. Here and there cases come to light where higher prices have been secured, but it is found to be due to expedition in delivery, an advantage which buyers in many lines appear willing to pay for. That a general advance in prices is in order no one doubts, but there is little intimation of it at present. When it comes it will be in the nature of a "follow suit" movement, commenced by such concerns as are sufficiently full of orders to make the loss of an order or two a matter of little consequence.

Builders of cranes are exceptionally busy, and experience some difficulty in keeping up to their engagements. They are hampered somewhat by delays occasioned in getting materials from the mills. A specification for 12 electric cranes, 5 to 35 tons capacity, to go to Russia has been going the rounds in this market, but it has not been learned that any of the builders could comply with the terms as regards deliveries.

A considerable improvement is noticeable in the demand for wood working machinery, and the business done during the week has assumed fair proportions. There is a great deal of inquiry in the market for wood working machinery of all kinds, and it is fully expected that the improvement noted will continue.

The shipyards, continue busy but there is not a great deal of new business offering. Perhaps the most important bookings for the month are those made by the Neafie & Levy Ship & Engine Building Company, who have secured orders for two steel tugs 170 and 92 feet long respectively for the Philadelphia & Reading Railway, a freight and passenger steamer 260 feet long for the Chesapeake Bay Steamship Company and a tug boat for the Long Island Railway, 112 feet long. The steamer for the Chesapeake Company is to be completed about the end of the year.

It is rumored that the New York Biscuit Company are about to erect a large factory at Twelfth street and Washington avenue on a lot measuring 150 x 350 feet.

Horn & Hardart have had plans prepared for the erection of a seven-story building at 1302 Filbert street. The building will be constructed partly of steel and be fire proofed. Bids will be asked for elevators, electric plant and steam heating plant. J. F. Stuckert & Son are the architects.

The Otto Gas Engine Works are very busy and report that the prospects for a heavy business during the year are very bright. Among the orders for large gas engines recently completed they mention one from the Erie Rail-

road for two engines, 120 horse power each, and one 60 horse power. These engines will be used for running air compressors and for electric lighting.

The Wrightsville Hardware Company, Wrightsville, Pa., have acquired a property on the river front, adjacent to their works, and are preparing plans for an enlargement of their plant.

The Geo. V. Cresson Company are running full in every department of their works. They have just completed an order for the shafting to be used in a large woolen mill in Tien-tsin, China. They have also completed an order from Java for a quantity of shafting, and another from Buenos Ayres for the shafting for a wood working mill. In their machinery department they are building some magnetic separators, and have just shipped one to the Fairmount Zinc Company, Fairmount, Ind. The company have recently added very largely to their equipment, and are now ready to contract for the building of heavy machinery, sugar rolls, crushing rolls of all kinds, rock breakers, and similar machines. They have already appointed agents in Cuba to represent them in that field.

Alfred Box & Co., crane builders, are very busy, their order book insuring the running of their works at their fullest capacity on cranes, engines and stokers for a year, even if no further orders should be taken. They are doing quite a nice business in automatic stokers, and have just received an order from the Bethlehem Iron Company for a set of 12 of them. In the engine department they are getting out the engines for the torpedo boat being built at the Nixon shipyard.

The Harrison Safety Boiler Works report a large demand for their Cochrane feed water heaters and purifiers and separators. Among their bookings for the month they mention orders for heaters from the Pana, Ill., Electric Light Company, 500 horse power; San Antonio Machinery & Supply Company, 200 horse power; Brand, Bullen & Gund, Chicago, 300 horse power; Wellman Seaver Engineering Company, Cleveland, 3000 horse power, for Birmingham, Ala.; Pennsylvania Iron Works Company, Philadelphia, 100 horse power; Delaware Lackawanna & Western Coal Company, Plymouth, Pa., 85C horse power. Orders for separators include two 8-inch for the Illinois Steel Company, Chicago; three 14-inch for the Ohio Steel Company, Youngstown, Ohio; one 16 inch for the Wellman Seaver Engineering Company, Cleveland, Ohio; one 6-inch for the Supreme Court Building, New York; one 12-inch for Fraser & Chalmers, New York; two 6 inch for the Western Pennsylvania Penitentiary, Allegheny, Pa.; one 8-inch for the Listie Mining & Mfg. Company, Somerset, Pa.; one 6-inch and two 8-inch for the Lorain Steel Company, Lorain, Ohio; three 6-inch for the Eastern Railway of Minnesota; one 4-inch for the city of Boston, Mass., Street Department; three 3-inch for the United States Government, and six 2 inch, one 4-inch and two 6-inch for foreign plants of the Anglo-Swiss Condensed Milk Company.

The Philadelphia Engineering Works have some nice orders in hand, including one for two 12 x 24 Corliss engines for a Pennsylvania concern. In their plate department they are building a chimney stack 7 x 100 feet, to go to Honolulu; another of large dimensions for the Boston Navy Yard, and a large boiler for Japan.

At the Baldwin Locomotive Works the rush of business continues, and the activity is greater than noted a month ago. Some very large orders have been placed within a month, and the number of inquiries received every day indicates that there will be some good transactions to close in the near future. In the matter of deliveries all engagements are being met and the capacity of the works for turning out locomotives does not appear to be unduly stretched. The severe competition which existed last year among locomotive builders has disappeared, and as a consequence prices are very much firmer. Recent order bookings include 45 compound locomotives for the Baltimore & Ohio Southwestern Railroad. A week ago three additional locomotives were shipped to Egypt, and there are now in course of construction at the works three locomotives which are to run on the Sirdar's railway to Khartoum.

At the exposition to be held in Philadelphia next fall in connection with the Commercial Museums a great deal of space will be devoted to the machinery department. A committee is now at work on the arrangements for this department, and as soon as plans are sufficiently matured the entire department will be placed in the hands of a competent mechanical engineer, who will be expected to devote his whole time to the work. Nothing has yet been done in regard to the equipment of the power house of the exposition, but it is understood that the engines and machinery will form a part of the exhibition of machinery.

Israel Johnson, Jr., & Co., lathe builders, continue very busy, and have enough orders on their books to run their plant three or four months. Among recent orders received they mention one from the Taylor Iron & Steel Company, Hightbridge, N. J., for two No. 3C lathes of special design, and another from the Cumberland Steel & Tin Plate Company, Cumberland, Md., for two No. 30 lathes.

Metal Market.

Office of *The Iron Age*, 232-238 William street, (New York, January 25, 1899.)

Pig Tin.—There have been further advances throughout the entire week and the closing price to-day is 24½c. to 25c. for spot. Arrivals during the last few days have been heavier, but spot is still scarce and not enough has been discharged to fill the present urgent demands. London has been very active all week and prices have advanced more than £10. At the close to-day quotations from London were £110 for spot and £109 7s. 6d. for three months' futures. This shows that there is a strong demand for spot stock even in London and that the stocks are being well held by the manipulators.

Copper.—Was active and considerably higher, sales being reported during the last two days at as high as 16c. for Lake. To-day's closing quotations are: Lake Superior Ingot, 15½c. to 16c.; Electrolytic Wire Bars, Cakes and Ingots, 15½c. to 15¾c., and Casting, 15½c. to 15¾c. Best Selected in London has advanced to £70 15s., which is an advance of 5 shillings over last week. The closing London quotations to-day were the highest for the week at £67 3s. 9d. for spot and £67 8s. 9d. for three months' futures. Exports thus far this month are small, amounting to 4125 tons, but it is expected that they will be much larger by the close of the month.

Pig Lead.—This metal was fairly active at about 4.25c. for spot and near by. St. Louis quoted 4c. to 4.05c., and the closing quotations from London were £13 3s. 9d., a decline of 6 shillings 3 pence for the week. Freight from the West are said to be very firm at 29c.

Spelter.—Has experienced a marked advance here in conformity with the rapid advances made during the week in the London market. Prices here at the close to-day were 5.65c. to 5.70c., while telegraph advices from St. Louis place that market strong at 5.25c. London closing prices are £25 15s. The Ore market has advanced \$1.50 per ton notwithstanding the large output. Buyers are keeping shy and the metal is being sold only in small quantities, where buying is necessitated for consumptive purposes.

Antimony.—There has been no change, and Hallett's and Japanese are quoted at 8¼c. Cookson's prices remain firm at 9½c. to 9¾c.

Nickel.—Is firm with prices unchanged at 38c. to 40c., according to quantity and delivery.

Tin Plate.—There has been no change in price, and rumors that another advance of 10c. per box has been made by the company are denied. The New York office of the company at 55 Fulton street, which is in charge of Frank Dickerson, is in operation, and all inquiries from the section east of the Allegheny Mountains are being referred to that office. We are informed that Mr. Wells, who has for some time been in charge of the Tin Plate business of Robert Crooks & Co., of this city, will open an office in San Francisco. This will be a sub or annex office to the Chicago office, and will be solely for handling the business along the Pacific Coast. We understand that it will be opened about the first of April, or perhaps the latter part of March next. The prices given below are f.o.b. boxed at all mills. We quote J. B. Grade American Tin, 14 x 20:

	F.o.b. Mills.
Bessemer Steel, full weight.....	\$3.12½
Bessemer Steel, 100 lbs.....	3.00
Bessemer Steel, 95 lbs.....	2.95
Bessemer Steel, 90 lbs.....	2.90
Bessemer Steel, 85 lbs.....	2.85
Bessemer Steel, 80 lbs.....	2.80
Charcoal Terno, same delivery—	
20 x 28, ordinary.....	5.65

The Virginia Iron, Coal & Coke Company.

The announcement is made that the undertaking headed by Moore & Schley, looking to the consolidation of furnace, ore and coal property along the Norfolk & Western Railroad, has been underwritten. The scheme includes the following furnaces: Dora Furnace Company, Pulaski, Va.; Max Meadows Iron Company, Max Meadows, Va.; Radford-Crane Iron Company, Radford, Va.; Graham Furnace Company, Graham, Va.; Salem Furnace Company, Salem, Va.; Buena Vista Furnace Company, Buena Vista, Va.; Crozer Iron Company, Roanoke, Va., and the Bristol Iron & Steel Company, Bristol, Va.

Of these only the Dora, Buena Vista and Crozer have been active in recent years. There is also included the plant of the Crescent Horseshoe & Iron Company and the following ore properties: Reed Island Iron Company, Locust Hill Mining Company, Foster Falls Mining & Mfg. Company, Wythe & Speedwell Iron & Mfg. Company, Cripple Creek Ore Properties, Edith Mining Com-

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING JANUARY 25, 1899.

	Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.
Am. S. & W., Common.....	12,425	48½-51½	52½-54	53 -54	.....	.....	-49
Am. S. & W., Pref.....	2,025	115 -117	120 -125	125 -128	.....	.....	.....
Col. Fuel and Iron.....	8,050	34½-35½	34½-35½	34½-35½	32½-34½	33½-34½	33½-34½
Federal Steel, Common.....	223,076	54 -54½	54½-55	53½-54½	52½-54	52½-55½	53½-54½
Federal Steel, Prefer.....	59,970	84 -85	83½-84½	83½-84½	83½-84½	83½-84½	83½-85½
Tennessee Coal and Iron.....	108,450	40½-41½	39½-41	39½-40½	39 -40	39½-42½	40½-42½
Cambria Iron, Phila.....	2,100	45 -45½	45 -45½	45½-45½	46 -46½	45 -46½	-46
Cambria, Scrip.....	900	89	.....	.....	.....	.....	.....
Cambria, Steel.....	121,485	15 -17	16½-17½	16½-17	16½-17	16 -17	15½-17½
Penna. Common, Phila.....	3,500	22 -22½	22½-26	26½-30	30½-33	33 -35	33 -33½
Penna. Prefer., Phila.....	450	.....	44 -49½	52½-55	-57	.....	-54
Tin Plate Com., Chic.....	.....	40 -41½	39½-41½	40½-41½	40 -41½	40 -41	40 -40½
Tin Plate Prefer., Chic.....	.....	95 -96	95 -95½	95½-95½	95 -95½	95 -95½	95½-95½

Late Philadelphia and Chicago sales by telegraph.

pany, Blue Ridge Mining Company, Consolidated Coal, Land & Iron Company, and the Wheeler properties. The consolidated company have also acquired ore lands in Johnson, Carter and Sullivan counties, Tennessee, and in Washington, Smythe, Wythe and Pulaski counties, Virginia. In the aggregate the acreage is 60,000 acres. The following are the coal and coke concerns included: Virginia & Tennessee Coal & Iron Company, Tom's Creek Coal & Coke Company, Wise County Coke Company, Speedwell Coal & Coke Company, Kentucky Coal and Coke Company, Jones Coal & Coke Company, Swansea Coal & Coke Company, Pine Run Coal & Coke Company, Coeburn Coal & Coke Company, Coeburn Colliery Company, Sexton Coal & Coke Company and Lee Coal & Coke Company. The only one of these concerns which is now a producer of coke is the Tom's Creek Company, 215 ovens. We understand that one of the first steps taken will be the building of 1000 ovens. Five collieries are now in operation.

The prospectus states that of the furnaces three can be blown in within 30 days, another within 60 days, and all can be put in running order within four months. This is regarded as rather optimistic in the iron trade, it being doubted whether the stacks can be started until ore property has been developed and the needed improvements and repairs can be made.

The Virginia Iron, Coal & Coke Company are to have a capital of \$10,000,000 of stock and \$10,000,000 5 per cent. bonds, of which \$7,500,000 of each is to be issued, the balance to remain in the treasury. Of this \$4,000,000 of bonds and \$4,000,000 of stock is to be used in the purchase of properties, commissions, expenses, &c. A syndicate has been organized to purchase for the sum of \$3,500,000 bonds to the amount of \$3,500,000 and a like amount of stock. It is proposed to acquire 93 miles of railroads and extend the system about 14 miles. The amount of money raised by the sale of the bonds and stock is to be used in the acquisition of properties, the reconstruction, extension and equipment of the railroad system, necessary expenses, certain improvements at one or more furnaces, additional coke ovens, ore washers and buildings; the amount remaining, estimated at \$1,000,000, to be placed in the treasury of the company as additional working capital and for other general purposes of the company. The reports upon which the flotation is based are those of James T. Gardner, who is connected with the coal department of the Erie Railroad, and of Walter Graham, who is well known in connection with the Virginia iron industry. It is reported that George L. Carter of Pulaski, Va., identified with the Dora property, will be general manager.

Iron and Industrial Stocks.

There has been a good deal of activity in Iron stocks during the past week, although this particular line has been almost overshadowed by the great general movement.

Tennessee Coal, Iron & Railroad Company has been very active recently, and has advanced because of the financial operations recently brought to a successful issue. We understand that a deal has been made whereby certain railroad property, understood to be that of the Pratt mines, passes into other hands for \$300,000 in cash and \$700,000 in stock. About \$400,000 of De Bardeleben bonds and \$300,000 of other bonds have been sold to retire high interest older issues covering the Alice and Eureka Furnace properties. We understand that this involves a saving in annual charges of \$23,000.

There was a good deal of trading on the curb in the new issues of the American Wire Company, the common selling as high during the week as 43½, while the preferred touched 96. Cambria Steel has held its recent advance to 17, while Pennsylvania Steel has risen very considerably.

A new industrial which has made a record is Besse-

mer Steel Car stock. The common started last Thursday at 38½ bid. Before Saturday it had gone as high as 49. On Monday it climbed to 55. The preferred sold between 85 and 89.

We append below closing quotations of a number of industrial stocks:

International Silver, Common.....	20	to	22
International Silver, 5c.....	99½	to	100
Mich.-Peninsular Car, Common.....	27	to	29
Mich.-Peninsular Car, Preferred.....	90	to	92
Mich.-Peninsular Car, First 5c.....	90½	to	101½
Otis Elevator, Common.....	42	to	43
Otis Elevator, Preferred.....	89	to	90
H. R. Worthington, Common.....	88	to	42
H. R. Worthington, Preferred.....	100	to	103
Cramp's Shipyard Stock.....	79	to	80
Pratt & Whitney, Common.....	3	to	6
Pratt & Whitney, Preferred.....	40	to	50
E. W. Bliss, Common.....	115		
E. W. Bliss, Preferred.....	125		
U. S. Projectile.....	85	to	90
Barney & Smith Car, Common.....	18	to	20
Barney & Smith Car, Preferred.....	80		

The American Steel & Wire Company.

On Tuesday the following Board of Directors of the American Steel & Wire Company of New Jersey was elected:

Three-Year Term: John W. Gates, Isaac L. Elwood, William Edenborn and John Lambert, all prominently connected with the industry, and Henry Seligman of J. & W. Seligman, bankers.

Two-Year Term: Stewart H. Chisholm, well known to the iron trade; Frederick P. Voorhees, William P. Palmer, formerly connected with the Carnegie and Illinois Steel companies; Philip W. Moen of the Washburn & Moen Mfg. Company, and Frederick Strauss of J. & W. Seligman.

One-Year Term: George T. Oliver of the Oliver Wire Company, Charles T. Boynton, Chicago manager of the Washburn & Moen Mfg. Company; Francis M. Drake, James Hopkins and Charles C. Howard, the latter of St. Louis, where he has been identified with the Biscuit Company.

The following officers have been elected:

Chairman, J. W. GATES.

President, JOHN LAMBERT.

Vice-Presidents:

First, W. EDENBORN.

Second, I. L. ELWOOD.

Third, S. H. CHISHOLM.

Fourth, P. W. MOEN.

Treasurer, W. A. Green.

Assistant Treasurer in Chicago, F. L. Watson.

Assistant Treasurer in New York, T. P. Alder.

Secretary, C. S. Roberts.

Assistant Secretary in Chicago, O. Owen.

Assistant Secretary in New York, F. E. Patterson.

General Manager, W. P. Palmer.

Assistant General Manager, A. M. Crane.

General Sales Agent, C. T. Boynton.

Auditor, C. A. Honecker.

Assistant Auditor, C. A. Vogt.

Executive Committee: I. L. Elwood, chairman; J. W. Gates, W. Edenborn.

A number of assistant general sales agents will be appointed later.

The stem, keel plates and stern post for the "Defender" have just been cast by the Bridgeport Deoxidized Bronze & Metal Company, Bridgeport, Conn., of their ordnance bronze, and this achievement is a matter of congratulation to the firm by reason of the difficult nature of the castings on account of their great length.

The statement has been made that in 1898 the Maryland Steel Company of Sparrow's Point, Md., shipped 91,438 tons of steel rails abroad.

HARDWARE.

Condition of Trade.

THE market is in a condition that continues to call for careful attention from buyers on account of the advancing tendency in many lines. This is most marked in Brass and Copper goods, which lie near the raw material, on which, it will be seen from the following reports, a number of actual advances have been made, with still a strong and upward tendency. In many lines in which Copper is an important material prices are still unchanged, but manufacturers are recognizing the pressure of higher costs for the metal, unless indeed, as in many cases is true, they have covered their needs for some time at low prices. The course of the Iron market, too, is such as to give strength to many lines of heavy goods. The work of associations or combinations is also an important factor in the situation, and several lines have been advanced in this way. In many others manufacturers are feeling the influence of the general drift toward higher prices, and are withdrawing options, extreme discounts, &c., if not naming actually higher quotations. It should be borne in mind that on a great many kinds of goods current prices are substantially unchanged, but the tone of the market even in these lines is decidedly improved, and the freedom with which orders are being placed gives a more confident feeling, which makes manufacturers much more independent than they have been for a long time. Another feature of the situation, which is not so satisfactory, is the fact that in many cases where advances are announced by the manufacturers large orders have been accepted at the old prices, so that the manufacturers are not in a position to realize at once the advantage connected with an improved market, while the goods which they send out in fulfillment of such contracts will, in many cases, have a disturbing effect on prices and put the jobbing trade in a position to undersell them if they are so disposed. It would be much to the advantage of the trade as a whole if there should be a wiser policy than is frequently pursued on the part of both manufacturers and jobbers in this regard—the manufacturers refraining from taking orders in anticipation of advances and jobbers, in case there is an advance after they have purchased, maintaining as nearly as may be expected the manufacturers' higher prices, thus obtaining for themselves the resulting profit, instead of giving it away to their customers. The improved feeling is not confined to manufacturers and jobbers, but the retail trade are, in many sections, at least, feeling the benefits of better times, with a hopeful spirit in regard to future trade.

Chicago.

The Hardware trade is quite active, with the volume of business steadily increasing. The recent advances which have been made on all kinds of Wire products have not checked business in these lines, but seem to have stimulated the demand. The advance in Poultry Netting referred to last week was 5 per cent., and not 2½

per cent. as stated. Transactions are on a much larger scale than usual during this month. The past week has been marked by further advances in Wire products and also on other goods. The upward movement in Copper, Lead, Spelter and Tin has carried with it advances on products made from these metals. Solder has advanced sharply. Sheet Copper has been marked up 2 cents on base sizes, to 18½ cents per pound, by manufacturers, and jobbers are now quoting 20½ cents to the retail trade. On some sizes the advance is from 3 to 10 cents, according to size. This change carries with it higher prices on all kinds of Copper Ware, Tea Kettles, &c. Copper and Brass Wire has been marked up. Loaded Shells and all kinds of Cartridges are likewise advanced 10 per cent. The stiffening tendency in Pig Iron, Bar Iron and Steel Billets will affect a large line of goods, and in a very short time it is likely that not a single article in Hardware will be found unaffected. Carriage Bolts are stiffer, with some manufacturers asking 7½ per cent. more. It is stated that some of the smaller manufacturers of Wire Cloth who have made contracts for the delivery of Cloth with a number of merchants will be unable to secure the Wire to make up the goods and will be obliged to ask to be released from their contracts. The manufacturers of Pocket Cutlery are confronted by higher prices and will shortly be obliged to put up their figures. They state that pearl has advanced 35 per cent., Brass 25 per cent. and Steel 10 per cent., while labor is also dearer.

St. Louis.

(By Telegraph.)

There is no let up in the good business in seasonable and even in the usually known unseasonable lines of Hardware. All sorts of spring goods are moving along freely. An advance of 5 per cent. is noted in Poultry Netting, and it is reported that the demand for it is better than ever. No change in quotations has yet been made in Galvanized Iron goods, but as the price of Sheets has been advanced higher figures may be looked for. Sales of Furniture and Cabinet Hardware are found to be unusually good, which is also found the case with the Heavy Hardware lines. The continued advance of Wire Nails and Barbed Wire does not diminish sales in these goods and is encouraging as showing the needs of the consumer.

Notes on Prices.

Wire Nails.—Since our last report the Wire Nail market has been steady and firm, manufacturers being in a position to maintain their advanced prices without difficulty, and the trade, realizing the firmness of the market, purchasing with a fair degree of freedom to supply their wants, present and prospective. On Monday another advance of 5 cents was made in the price of Wire Nails, which are now quoted at \$1.50, base, f.o.b. Pittsburgh or Cleveland, to the large trade, the price to single carload buyers being \$1.55, while to this class of trade in less than carload lots the price is \$1.60.

New York.—The New York market reflects the general condition. Prices are firmly maintained, and while in some cases the trade are reluctant to pay the higher quotations now ruling, manufacturers and their representatives have little difficulty in obtaining them. Quotations are as follows: Carload lots on dock, \$1.65; small lots from store, \$1.75.

Chicago.—Manufacturers report a large business, which seems to have grown greater since the recent ad-

vances in prices. An inquiry has been made for 100,000 kegs, but manufacturers will only sell for delivery in 30 days. During the week another advance of 5 cents was made, and carload lots are now quoted at \$1.65, Chicago or equal. Jobbers report an active demand, probably greater than ever before at this season, and their price has been advanced to \$1.70 for small lots from stock.

St. Louis, by Telegraph.—A further advance has been made in Wire Nails, which are now quoted at \$1.65, base, in carload lots to jobbers, f.o.b. St. Louis. Single carloads are held by jobbers at \$1.70, base, and less than single cars at \$1.75 minimum.

Pittsburgh.—Taking effect on Monday, January 23, the American Steel & Wire Company announced another advance of 5 cents per keg on Wire Nails, the minimum quotation to jobbers now being \$1.50, base, f.o.b. Pittsburgh or Cleveland, for prompt shipment. This advance emphasizes more clearly the fact that this concern are now in practically complete control of the trade, but it is not believed that prices, for some time at least, will be further advanced. It seemed to be the impression among those well posted when the negotiations were going on for the taking over of the independent Wire Nail concerns by the American Steel & Wire Company that as soon as possible the price would be advanced to \$1.50 per keg, and probably kept there. That these impressions were well founded is now evident. The trade realize thoroughly the strong position of the American Steel & Wire Company, and as a result are placing orders for Nails quite freely, but no contracts are being made, it being the policy to sell for early delivery only. At the same time it is a fact that a good many contracts for Nails at lower prices are on the books of the different mills, but in a good many cases deliveries are being extended at the request of buyers. We quote Wire Nails as follows: To jobbing trade, \$1.50, base, with $2\frac{1}{2}$ cents advance per 100 pounds, less than carloads, direct shipment on contracts; to the single carload buyer, 5 cents advance, or \$1.55, base. Less than carload lots to retailer, 10 cents advance over price to jobbers, all f.o.b. cars Pittsburgh or Cleveland.

Cut Nails.—The Cut Nail market is characterized by more even quotations than is frequently the case, the manufacturers being evidently encouraged to ask better prices for Cut Nails in view of the substantial advances which have taken place in Wire Nails. The market is still represented by the quotation of \$1.20, base, for carload lots, f.o.b. Pittsburgh. Eastern manufacturers are quoting on this basis, adding Pittsburgh freight to the point of destination. There have been some conferences among the representatives of leading mills with a view to forming a strong organization and obtaining the advantage afforded them by the condition of the Wire Nail market. Thus far nothing definite has been accomplished in this direction, and it is a question what the course of things will be.

New York.—There is no quotable change in the New York Cut Nail market, quotations remaining as before. Carload lots on dock, New York, are quoted at \$1.35, and small lots from store \$1.45.

Chicago.—The demand for Cut Nails is of about its usual proportions, and small lots are still quoted at \$1.40.

St. Louis, by Telegraph.—An advance has been made in Cut Nails, which are now held at \$1.50 in lots from store.

Pittsburgh.—The Cut Nail makers, in view of the strong situation in the Wire Nail trade, have come to an agreement and pledged themselves to maintain prices. The volume of business is reported to be increasing. We quote Cut Nails at \$1.20, base, f.o.b. Pittsburgh in carload lots, to which freight to destination should be added.

Barb Wire.—Barb Wire continues very firm in view of the complete control of the market by the American Steel & Wire Company. Quotations until Monday last were represented by \$1.55 for Painted in carload lots and \$1.90 for Galvanized, f.o.b. Pittsburgh or Cleveland, single carload buyers paying 5 cents advance over the above,

but January 23 an advance of 5 cents was made. The policy of charging $2\frac{1}{2}$ cents on less than carload lots in direct shipments on jobbers' account is still in force, and to retail purchasers on less than carload lots an advance of 10 cents is made over the jobbers' carload price.

New York.—The market continues as before, with a strong and upward tone and the promise of a good volume of business in the near future. Quotations on Four-Point Galvanized, in view of the advance made by the manufacturers January 24, are as follows: Carload lots on dock, \$2.05; small lots from store, \$2.10 to \$2.15.

Chicago.—The demand for all kinds of Smooth and Barb Wire continues on a large scale. Manufacturers and jobbers alike report a remarkable volume of business. Another advance of 5 cents per 100 pounds has been made during the week, and quotations are now as follows on carload lots on board cars at Joliet or De Kalb: Plain Wire, \$1.50; Painted Wire, \$1.75, with a spread of 35 cents per 100 pounds on Galvanized. An advance of 5 cents is made on Ellwood, Glidden or Baker Barb Wire. Small lots from stock are firmly held at an advance of 5 cents above carload prices.

St. Louis, by Telegraph.—Sales of Barb Wire are very good, and as comparatively warm weather has prevailed throughout the South and Southwest much of it has been taken for immediate use. Prices have been advanced to \$1.75 for carload lots to jobbers, f.o.b. St. Louis, and single cars are furnished by jobbers at \$1.80. Smaller quantities are quoted at a minimum figure of \$1.85. The usual advance of 35 cents per 100 pounds is made for Galvanized.

Pittsburgh.—Taking effect Monday, January 23, the American Steel & Wire Company announce an advance of 5 cents per 100 pounds on Painted and Galvanized Barb Wire. This concern are in complete control of the situation and established prices are being rigidly held. The demand for Barb Wire is reported to be increasing, buyers anticipating requirements to some extent, in view of the likelihood of still higher prices. We quote for prompt shipment Painted Barb Wire at \$1.60; Galvanized Barb Wire, \$1.95, f.o.b. cars Pittsburgh or Cleveland. To jobbing trade, $2\frac{1}{2}$ cents advance per 100 pounds, less than carload lots, direct shipment on contracts. To the single carload buyer 5 cents advance over the jobbing price. Less than carload lots to retailer, 10 cents advance over jobbing price.

Smooth Wire.—The market on Smooth Wire is unchanged in its general features, but prices are 5 cents higher as a result of the advance made by the American Steel & Wire Company January 24. The price for Plain Wire is represented by the quotation of \$1.35, base, f.o.b. Pittsburgh or Cleveland, with 35 cents additional for Galvanized. The reference in our last issue should have made the additional charge for Galvanized Wire 35 cents instead of 30 cents as printed. Single carload buyers are to pay 5 cents more, and on less than carloads 10 cents more. The arrangement by which the jobbing trade are charged $2\frac{1}{2}$ cents advance on less than carload lots in direct shipments continues in force.

Pittsburgh.—As in the case with Barb Wire and Wire Nails, the American Steel & Wire Company announce an advance of 5 cents per 100 pounds, taking effect on Monday, January 23. We quote Smooth Wire at \$1.35, base, with 35 cents advance for Galvanized, f.o.b. Pittsburgh or Cleveland. To the jobbing trade, $2\frac{1}{2}$ cents advance per 100 pounds, less than carloads, direct shipment on contracts; to the single carload buyer, 5 cents advance over the jobbing price; less than carload lots to retailer, 10 cents advance.

Sheet Copper.—On account of the condition of the Copper market the prices of manufactured Copper are strong and higher. Under date January 19 an advance of 2 cents was made in the prices of Sheet Copper, making the price $18\frac{1}{2}$ cents, base, with usual extras. Another advance to $19\frac{1}{2}$ cents, base, was made yesterday, January 24.

Copper Bottoms, Pits and Flats.—Corresponding advances have been made in the price of Copper Bottoms, Pits and Flats, which are now quoted at $23\frac{1}{2}$ cents a pound

crated, less than carload lots, nested, and less than carload lots, not nested. In this way it is expected by the manufacturers that the jobbing trade will be given a reasonable margin of profit. No freight is allowed on less than crate lots of 250 lineal feet. The quotations to the smaller dealers in the Central, Southern and Western territories are in a general way from $7\frac{1}{2}$ to $12\frac{1}{2}$ per cent. higher than in the Eastern territory. The different territories may roughly be described as follows:

Eastern Territory: Covering the Northern States east of the Mississippi River, the southern boundary being the Chesapeake & Ohio Railroad from Newport News, Va., to Huntington, W. Va., Ohio River to Cairo, Ky., Mississippi River to the lakes, and thence east to Fort Howard, Wis., taking in the north peninsula of Michigan and Canadian points.

Central Territory: All north of South Carolina, Georgia, Alabama, Mississippi, Missouri and east of Indian Territory, Kansas, Nebraska, South Dakota, east of Sioux Falls and east of the line of the Great Northern Railway. Sioux Falls to Duluth to be in this territory unless included in the Eastern. Savannah, Ga., and Charleston, S. C., take Central territory prices.

Southern Territory: All east of Mississippi River not in Eastern or Central Territories to be in this territory. New Orleans is free.

Western Territory: All west of western lines of Southern and Central territories.

Double Pointed Tacks.—In view of the advance in Wire some of the manufacturers at least have advanced their quotations on Double Pointed Tacks and are not giving extra tens as liberally as heretofore.

Bare and Insulated Copper Wire.—Under date January 23 the following advanced prices on Bare and Insulated Copper Wire were adopted by the associated manufacturers:

<i>Bare Copper Wire.</i>		Cents.
4/0 to 8, B. & S. gauge	.....	18
9 and 10	“	18½
11 “ 12	“	18½
13	“	18½
14	“	18½
15	“	19
16	“	19½
17	“	19½
18	“	20
19	“	20½
20	“	20½

No.		Cents.
8	and coarser, B. & S. gauge.....	18½
9	" 10 "	19½
11	" 12 "	20½
13	" 14 "	22½
15	" 16 "	23½
17	" 18 "	25½
19	" 20 "	27½

Office and Annunciator Wires.			
Size. No.		Office. Cents.	Annunciator. Cents.
12	B. & S. gauge.....	21½	21
13 and 14	".....	23	22½
15	" 16.....	24	24
17	" 18.....	26	25½
19	" 20.....	28	27½

Ammunition, Loaded Shells, &c.—Under date January 19 advanced prices are announced by the manufacturers of Cartridges and Loaded Shells, as noted below. This action is taken in view of the price of Ingot Copper. The following are the present quotations on Cartridges, with 2 per cent. additional for cash in ten days:

	Discount.
	Per cent.
Rim Fire Pistol Cartridges.....	50 and 5
Center Fire Cartridges, pistol and rifle.....	25 and 5
" " " military and sporting.....	15 and 10

In Loaded Shells those with black powder are advanced 10 per cent. and those with smokeless powder 5 per cent.

Carriage Bolts, Machine Bolts, &c.—The market for Carriage Bolts, Machine Bolts, Lag Screws, Bolt Ends, &c., is decidedly firm and the manufacturers generally have withdrawn some of their extreme discounts. There has been no concerted action in this matter, but in view of the increased cost of the raw material and the way in which orders are coming in prices are quotably higher. The following discounts are given as representing the present quotations to large buyers, there being, however, some divergence in the prices of the different manufacturers:

	Discount.
	Per cent.
Machine Bolts.....	.80 and 10
Lag Screws, cone point.....	.85, $7\frac{1}{2}$ and $7\frac{1}{2}$
Lag Screws, gimlet point.....	.85 and $7\frac{1}{2}$
Bolt Ends.....	.80 and 10
Common Carriage Bolts.....	.75 and 20

Some advances have also been made in the price of Nuts.

Some advances have also been made in the price of Nuts.

Brass Butts, Brass Jack Chain, &c.—Some of the manufacturers of these goods and others into which Brass and Copper enter as a material are withdrawing quotations. Others are still furnishing the goods at prices which have prevailed, but are pursuing a conservative course, scrutinizing orders closely and refusing to accept them for future delivery. It is safe to say that all goods of which Copper or Brass is an important material are held firmly, manufacturers in most cases contemplating the advisability of announcing advanced prices.

Paris Green.—Arsenic Paris Green has advanced in price as a result of higher values in raw materials. Blue Vitriol, which is a product of Copper and enters into the composition of Paris Green, has been advanced 2 cents, and Arsenic has also advanced. The market for Paris Green is strong on the basis of 11½ to 12 cents per pound in Arsenic kegs or casks, without quantity rebate, these being 30-day net prices. Makers prefer selling small quantities rather than large ones at the lower price, as they are looking forward to further advance in price. Jobbers who purchased Green at 8¼ to 9 cents are satisfied with the profit present prices yield. The following are net prices, 30 days, according to quantity and purchaser:

	Cents per pound.
Arsenic kegs or casks.....	11½ to 12
Kegs of 100 to 175 pounds.....	12 to 12½
Kits of 14, 28 and 56 ".....	13 to 13½
Paper boxes, 2 to 5 ".....	13 to 13½
" " 1 pound.....	13½ to 14
" " ½ ".....	14½ to 15
" " ¼ ".....	15½ to 16

Glass.—The time limit for large purchasers buying Window Glass at the rebate expired January 20. This device on the part of combine manufacturers appears to have been successful in inducing jobbers to place orders, but whether it took any business from the co-operative and independent factories is questionable. Stocks are again accumulating at combine factories, and a large increase in the productive capacity of the country is promised for next year if the new plants planned are erected. The prospects of an open market next fall are engaging the attention of the trade to some extent. Prices remain unchanged as follows:

Districts.	A.	B.	C.	D.	E.
5000 boxes or more	85 & 10 & 5	85 & 10 & 5	.....	.....	85 & 10
Carleida.....	85 & 5	85 & 5	85 & 5 & 2½	.....	85
3000 boxes or more.....	85 & 10	85 & 10	.....	.....	85 & 5 & 2½
1000 boxes or more.....	.....	.....	85 & 10 & 2½	.....	.....

These prices are subject to freight allowance.

Paints and Colors.—*White Lead.*—An improved demand is noticed for White Lead in Oil, both in the way of new business and on deliveries on contract. This is especially true of the West, which has led other sections of the country for some time in the consumption of both Dry and Lead in Oil. Quotations continue on the basis of 6 cents per pound in lots of less than 500 pounds and $5\frac{1}{4}$ to $5\frac{1}{2}$ cents per pound in lots of 500 pounds and over. Dry Lead is quoted at 5 cents per pound in barrels.

Oils.—*Linseed Oil.*—The market is in an exceedingly strong position and considerable Linseed Oil is changing hands. The American Linseed Oil Company are now an active factor in the market and considerable activity is shown by them in soliciting orders. Prices are without change on the basis of from 41 to 42 cents for Raw, according to quantity, with the usual 2-cent advance for Boiled. Oil should be 4 cents per gallon higher in price to be in proportion to the price of seed. Whether the market is strong upon its merits or from other causes is hard to determine.

Spirits Turpentine.—There is an absence of active inquiry for Turpentine, and the market has fallen off a little in consequence. Purchasers are holding off, and stocks are more than sufficient both here and at Savannah to supply requirements. Present quotations here are 42½ cents for Southern and 43 cents for machine made barrels.

TESTIMONIAL BANQUET TO WILLIAM W. SUPPLEE.

IN view of the position, services and personal worth of William W. Supplee, president of the Supplee Hardware Company, Philadelphia, a banquet was tendered to him by the Hardware Merchants and Manufacturers' Association of that city on Wednesday evening, January 18. It was held in the historic banquet hall of the Union League Club and was an elegant affair, attended not only by the trade of Philadelphia, but by prominent manufacturers and jobbers from other cities. Mr. Supplee has long been an active and influential member of the Philadelphia trade, and a public spirited citizen identified with important movements in that city and advancing in many ways its interests. His position as president of the National Hardware Association gave him a leading part in the work of this organization, to whose interests during four terms of office he devoted himself with rare energy and ability, contributing largely to its influence and success. The banquet in his honor, with its many expressions of appreciation and esteem, must have been exceedingly gratifying to him.

The Guests.

The company was large and representative, as indicated by the following names of those present:

Samuel Disston, Henry Disston & Sons.
Robert J. Johnson, Henry Disston & Sons.
Harry C. Disston, Henry Disston & Sons.
C. W. Hubbard, Jr., American Axe & Tool Company.
Wm. Chamberlain, Emery - Waterhouse Company.
Winfield D. Walkley, Peck, Stow & Wilcox Company.
Jacob M. Vogdes, Henry Disston & Sons.
Thaddeus Smith, Union Nut & Bolt Company.
S. Hudson Kinney, Russell & Erwin Mfg. Company.
Edwin Gilbert, Russell & Erwin Mfg. Company.
James B. Wilson, Russell & Erwin Mfg. Company.
J. H. Van Newkirk, Russell & Erwin Mfg. Company.
David H. Reddie, Biddle Hardware Company.
James H. Ritter, Biddle Hardware Company.
Geo. E. Bartol, the Philadelphia Bourse.
A. D. Clinch, Underhill, Clinch & Co.
T. James Fernley, secretary-treasurer National Hardware Association.
Samuel B. Huey, President Philadelphia Board of Education.
David S. Cann, Cann & Saul.
Geo. E. Saul, Cann & Saul.
Nathan A. Taylor, N. & G. Taylor Company.
S. G. North, North Bros. Mfg. Company.
Ralph H. North, North Bros. Mfg. Company.
J. B. Holme, North Bros. Mfg. Company.
A. C. Albrecht, North Bros. Mfg. Company.
Joseph B. Weed, John H. Graham & Co.
Edward E. Perry, Iver Johnson's Arms & Cycle Works.
Tylee B. Hendrickson, Reading Hardware Company.
Harry S. Hendrickson, Reading Hardware Company.
Daniel W. Hartzog, Reading Hardware Company.
E. K. Tryon, Jr., E. K. Tryon, Jr., & Co.
Edward B. Mears, Jr., E. K. Tryon, Jr., & Co.
Evan D. Chandlee, E. K. Tryon, Jr., & Co.
Chas. Z. Tryon, E. K. Tryon, Jr., & Co.



William W. Supplee

Hugh McCaffrey, McCaffrey File Company.
Hugh I. McCaffrey, McCaffrey File Company.
Walter A. McCaffrey, McCaffrey File Company.
Edward V. McCaffrey, McCaffrey File Company.
Alfred C. Rex, A. C. Rex & Co.
Ellicott Fisher, Ellicott Fisher Company.
Joseph G. Rittenhouse, Cambria Iron Company.
Crawford Miller, J. Barton Smith Company.
Edward Darby, Edward Darby & Sons.
Edwin S. Rowland, T. Rowland's Sons.
Rush Rowland, T. Rowland's Sons.
E. L. Hand, E. L. Hand & Co.
Elmer E. Brown, E. E. Brown & Co.
Nicholas A. Petry, Penn Hardware Company.
W. B. Munroe, Biddle Hardware Company.
John W. Owen, American Axe & Tool Company.
H. Bielefeldt.
W. B. Parker, Biddle Hardware Company.
E. B. Pike, Pike Mfg. Company.
Chas. L. Mead, Stanley Rule & Level Company.
Chas. B. Adamson, Baeder, Adamson & Co.
Robert W. Mallon, Baeder, Adamson & Co.
Samuel A. Bigelow, Bigelow & Dowse Company.
Emil P. Albrecht, The Philadelphia Bourse.
Geo. Reuter, Jr., American Wringer Company.
L. H. Pease, Stanley Works.

W. H. Stubbs, Stubbs Steel Company.
Louis V. Wolf, Star Lock Works.
A. A. Rogers, Rogers & Miller.
Henry Barnett, G. & H. Barnett Company.
Alfred W. Barnett, G. & H. Barnett Company.
Geo. F. Barnett, G. & H. Barnett Company.
Henry W. Scattergood, G. & H. Barnett Company.
Henry J. Gosling, G. & H. Barnett Company.
Fayette R. Plumb, Fayette R. Plumb.
Chas. E. Grange, Fayette R. Plumb.
Chas. S. Forsyth, Philadelphia Hardware Buyers' Association.
Chas. W. Gause, Philadelphia Hardware Buyers' Association.
Chas. M. Biddle, Biddle Hardware Company.
Edward Knight, Biddle Hardware Company.
William D. Supplee, Supplee Hardware Company.

Stephen W. Tener, Oliver Wire Company.
N. F. Cressman, Supplee Hardware Company.
Frank W. Huff, Supplee Hardware Company.
Walter S. Cook, Supplee Hardware Company.
E. W. Whitehead, Walden Knife Company.
E. S. Fogg, Supplee Hardware Company.
John Cook Brown, Supplee Hardware Company.
James S. Bonbright, Supplee Hardware Company.
James D. Green, Supplee Hardware Company.
Chas. A. Huff, Supplee Hardware Company.
A. N. Diller, Supplee Hardware Company.
John P. Braun, Pennsylvania Lawn Mower Company.
Wm. P. M. Braun, Pennsylvania Lawn Mower Company.
Joseph Clarke, Supplee Hardware Company.
Wm. Waterall, The Trades League.
J. Wesley Supplee, president Commercial Exchange Bank.
Joel J. Bailey, Philadelphia.
Tom Almgill, G. & H. Barnett Company.
Frank G. Drew, T. James Fernley.
T. Henry Asbury, Enterprise Mfg. Company.
L. W. Klahr, Enterprise Mfg. Company.
A. S. Kille, Yale & Towne Mfg. Company.
J. R. Seltzer, Seltzer-Klahr Hardware Company.
S. Spencer Scott, Seltzer-Klahr Hardware Company.
C. M. Ghiskey, Chas. M. Ghiskey.
H. C. Ghiskey, Chas. M. Ghiskey.
Smith Harper, Smith Harper.
J. H. Kennedy, Hardware.

Wm. C. Peters, J. M. Vance & Co.
 Daniel Stern, *The Artisan*.
 Charence E. Sharpless, Biddle Hardware Company.
 W. C. Krider, Biddle Hardware Company.
 Job T. Pugh, Job T. Pugh.
 W. H. Allen, W. H. & G. W. Allen.
 H. G. Kraft, Biddle Hardware Company.
 R. R. Williams, *The Iron Age*.

Letters of Regret.

A number of letters were read from prominent merchants and manufacturers who were prevented from being present, and a telegram was received from H. H. Bishop, who succeeds Mr. Supplee in the presidency of the National Hardware Association, regretting that circumstances prevented him from attending the banquet. The address which he intended to deliver was, however, made through S. A. Bigelow, and is given below.

The Banquet.

The banquet was characterized not only by its elegance and an excellent menu, but by the spirit of cordiality and fraternity which prevailed in the assembly. A noticeable feature was the entire absence of wines, the beverages, as designated on the menu, being Apollinaris, "Schuylkill Red Label" and "Delaware Brown Label." This did not, however, appear in the least to interfere with the good cheer and enjoyment of the occasion, and was by many of the guests referred to in terms of marked approval.

The Presentations.

Mr. Supplee's friends were not content with words of appreciation, but evidenced their regard in a substantial and enduring manner, as a rich and elegant silver service was presented by the National Hardware Association and a handsome chime clock by the Hardware Merchants' and Manufacturers' Association of Philadelphia.

After Dinner.

The assembly was called to order by James H. Ritter, president of the Philadelphia Association, when the following toast list furnished the programme for the evening's entertainment and the special features of the occasion in honor of Mr. Supplee:

- Greeting*, JAMES H. RITTER.
 To thee and thy company, I bid
 A hearty welcome.—*Shakespeare*.
- Our Honored Guest*, H. H. BISHOP.
 Let lips do what hands do.—*Shakespeare*.
- Testimonial Address*, A. D. CLINCH.
 I pretended not fully to state, much less demonstrate,
 The truth contained in the text.—*Atterbury*.
- Acceptance and Retrospective Remarks*, . . W. W. SUPPLEE.
 Easy in words thy style,
 In sense sublime.—*Prior*.
- Song*, JOHN F. BRAUN.
 Perhaps it may turn out a song;
 Perhaps turn out a sermon.—*Burns*.
- Our Trades League*, W. W. FOULKROD.
 We are forced to take sides on it, either as
 Progressives or conservatives.—*S. Thurber*.
- The Future of Our Country*, GEORGE E. BARTOL.
 Nothing succeeds like success.—*Greeley*.
- Song*, SUPPLEE QUARTETTE.
 The bird does not betray the secret springs
 Whence note on note his music sweetly pours.—*Jones Very*.
- Our Manufacturers*, FAYETTE R. PLUMB.
 Know how sublime a thing it is
 To suffer and be strong.—*Longfellow*.
- The Relation of Our Editors to Merchants and Manufacturers*, R. R. WILLIAMS.
 I chose to write the thing I durst not speak.—*Prior*.
- The Social Side of the Hardwareman*, JAMES H. KENNEDY.
 Proper words in proper places,
 Make the true definition of a style.—*Swift*.

Mr. Ritter's Greeting.

The chairman extended a welcome to the guests, and paid an eloquent tribute to Mr. Supplee, as follows:

One of our wisest men once wrote an essay on "Compensation"—it was not a treatise on salaries—in which he made it clear that all things have their compensations—

heat balances cold, rest balances labor—and, in looking at our suspense accounts, I sometimes wish that credit always balanced debt; but, as I rise to-night to the pleasant duty of giving you a heartfelt welcome to our social feast, it seems to me that in this gracious task even the Hardware business has its compensations, and Heaven knows it needs them. And in welcoming those who are here, in fancy my voice goes further and sends a welcome from the East to the West, from the Lakes to the Gulf, to all those absent members of our National Association who are here to-night by their delegates.

AN HONORED NAME.

For now, laying aside the cares and rivalries of trade and the interesting results of our stock taking, we meet as fellow members of our Philadelphia Association, with guests from other trade organizations and friends from distant cities, to do honor to one of our own number, William Supplee, who by diligence and unremitting industry, and even self sacrifice, has made for himself an honored name in the long and distinguished roll of Philadelphia merchants.

BENJAMIN FRANKLIN.

At present there is a revival of interest in the life of one of our most noted merchants—a man who is justly called "many sided," and for whom our University of Pennsylvania, the Pennsylvania Hospital, our Philadelphia Library and the Philosophical Society are only some of his memorials. I refer to that Philadelphian by adoption—Benjamin Franklin. In a certain part of his frank and ingenuous biography he dwells with pardonable pride on the proverb which was taught him in his youth by his mother: "Seest thou a man diligent in his business? He shall stand before kings." Said Franklin: "I never expected to see this word of Solomon literally fulfilled, and yet I have stood before several kings and even dined socially with one." So, as in Franklin's case, we have as our chief guest to-night one of our number who, by his own proving of this wise saying, now comes to be honored with our well earned praise and thanks.

To William W. Supplee I, therefore, give a special word of welcome, pausing to add only a few words which I feel sure will be almost superfluous by reason of the eloquence which is to follow me.

OUR FAIR COUNTRY.

And, if the occasion is a rare one, what shall be said of this historic room, in which so many of the noted men of our nation have been entertained, and from whose walls there gaze upon us now the inspiring faces of those typical Americans, George Washington and Ulysses S. Grant? Never shall I forget that evening several years ago when one of our Irish members—I need hardly say it was not Mr. Supplee—moved to more than eloquence by the associations of this room, drew a picture of a barefooted boy playing in rags and poverty on the hills of Ireland, later coming to this, his adopted country, with no capital but honest hands and an industrious spirit, and then, by the advantage afforded by this fair country, rising step by step, through sheer merit, until his voice rang out clearly in this room, where the once barefooted boy at last stood a man among men, a peer among his peers. All honor to the flag which waves over a country where such progress is possible. All honor to the man, whoever he is, who, by diligence and worth, rises to prominence among his fellows.

Among these is our guest of the evening, and perhaps I may pause in my greeting to say a few words in regard to Mr. Supplee's career, leaving others, who have known him longer, to relate details more fully.

MR. SUPPLEE'S CAREER.

Mr. Supplee made two mistakes in his life—one was in being born in Norristown—I cannot tell you when: perhaps he will if you ask him. Like Benjamin Franklin he soon saw his mistake and early came to Philadelphia, where he was in business for some years. Then came his second error, for in 1859 he left Philadelphia; this of course, as old Philadelphians know, is always a mistake.

Mr. Supplee anticipated Horace Greeley's advice and went West to what was at that time the frontier town of La Crosse in Wisconsin. I do not doubt he could give us harrowing tales of Indian escapes and perilous adventures, but his natural modesty has always kept these suppressed. Soon he repented, and so we forgive him, for in 1867 he came back to Philadelphia and entered the old business which at that time was known by the firm name of Conrad & Walton. Since then his life has been an open book known and read of all men. Philadelphians know and appreciate the interest he has taken in civic affairs, freely sacrificing his own large business interests for the public good. His recent work in behalf of the Bourse is known to you all, and if the Bourse is to realize all the worthy ideas of its projectors much will be due to Mr. Supplee, who nobly came to its help in the hour of need and spared neither time nor health in its behalf.

Perhaps Mr. Supplee wonders where I got some of these details of his early life, and that brings me to a story of that prince of preachers, Phillips Brooks. It seems that a friend of his had a little daughter, who in some unaccountable way and greatly to her mother's distress had picked up a number of naughty words, which she used with shocking freedom. One day the mother appealed to Phillips Brooks for aid, and so, taking the little girl on his knee, he told her he had heard very bad things about her and that she used naughty words. "Who told you?" asked the child. "Oh, a little bird told me," said Brooks. "Who told you?" repeated the child. "A little bird," said Brooks. "Oh," replied the youngster, "it must have been one of those darned little English sparrows." Perhaps I got my facts in the same way.

NATIONAL HARDWARE ASSOCIATION.

But Mr. Supplee's work in the National Hardware Association is not so well known. This association was started in 1894 and Mr. Supplee was elected its first president and held the position until his peremptory resignation last year made it necessary to elect a successor. Every business man knows the discouragements and trials of these four years—the many new problems to be faced, requiring careful and often anxious thought, the increasing detail and complexity of business, and the burdens entailed by narrowing margins and increasing expenses. It has taken brave men to stand the stress and strain of their own business, but Mr. Supplee, at the call of duty, did not hesitate to assume the presidency of the National Hardware Association, and no one fully knows the amount of work which he cheerfully did in that position. Small wonder, then, that our National Association should deem it fitting to take some action in testimony of his services, and among our guests to-night are its representatives, who are charged to voice the feeling of its members toward Mr. Supplee and their appreciation of the work he has done.

FATHER AND SON.

Among the games of classic Greece there comes to our mind that of the runners who ran their races with lighted torches. Fleet and sure footed, they ran swiftly and straight on the course until, strength failing, they handed their torches to fresh comrades, and thus, through relays of graceful runners, the lighted torches went on to the goal and victory. Even so is example, and may Mr. Supplee's example spur others on to earnest effort in carrying the torch of our National Association on to a still grander future and a more glorious realization; and Mr. Supplee is fortunate in having a son, Wm. D. Supplee, who I know will nobly carry forward in his business the torch which his father lighted.

MR. SUPPLEE'S BROAD MINDEDNESS.

But Mr. Supplee's work did not end in efforts to gain a selfish advantage for his fellow jobbers. He was broad minded enough to clearly see justice demanded manufacturers should have their due, and so the policy was early outlined that the work undertaken by the National Association was to be done in a spirit of fairness to both jobbers and manufacturers. At first, manufacturers viewed the National Association with suspicion, regarding

it in more ways than one as a club to be used in pounding out further advantages and concessions for jobbers only. Now this misconception is almost entirely removed. Manufacturers realize that the association regards manufacturing interests as existing side by side with those of jobbers, and so, largely through Mr. Supplee's efforts, many of the warmest friends of the National Association are to be found among manufacturers.

HIS LOCAL WORK.

And I cannot let this occasion pass without alluding to his work in our local association, where for two years as president, and for many more as an active member, his counsels and his acts have been for the common good. And what greater argument can be found for the maintenance of our local association than the spectacle afforded to-night, where we, once kept apart by jealous and envious competition, now gladly meet to honor one of our members for his efforts in behalf of all?

BUSINESS SUCCESS.

And, even if Mr. Supplee had not been active in public affairs, had not toiled and planned for the National Association, had not taken part in our Philadelphia Association, is it nothing that he now stands among us after 40 years of successful business life? All this time his hand has been at the helm of his business, and through fair weather and foul the good ship has kept steadily on her course, surviving all the storms and cyclones of financial disaster which have strewn our commercial coasts with the wrecks of so many fair enterprises and buried amid the sands of time so many cargoes of buoyant hopes. So now the good ship is before us, having weathered safely all the gales, and with all sails spread still standing on her course, and may the breezes of promise, now gently fanning us, waft it, and all of us, to the golden sea of prosperity.

And as Mr. Supplee now reviews the toilsome years that are gone and reflects upon their cares and responsibilities, well may he say with the poet:

Gray distance hid each shining sail,
By ruthless breezes borne from me;
And lessening, fading, faint and pale,
My ships went forth to sea.

Where misty breakers rose and fell
I stood and sorrowed hopelessly;
For every wave had tales to tell
Of wrecks far out to sea.

To-day a song is on my lips;
Earth seems a paradise to me—
For God is good, and lo, my ships
Are coming home from sea.

And now, gentlemen, in the name of the Hardware Merchants and Manufacturers' Association of Philadelphia, I again bid you welcome, and to our chief guest, William W. Supplee, I add my hearty congratulations and the hope that he may be favored with many years in which to reap the fruits of his labor and to enjoy the priceless possession of an honored name.

S. A. Bigelow

of Bigelow & Dowse Company, Boston, who has from the first been closely identified with the working of the National Hardware Association and recognized as one of its ablest and most influential members, spoke briefly and felicitously in introducing the paper prepared by H. H. Bishop, president of the association, in the form of an address to Mr. Supplee, at the suggestion of the toast, "Our Honored Guest."

Mr. Bishop's Paper.

Is it not a great pleasure and satisfaction to you, and to all present, to consider for a moment the circumstances that make a gathering of this kind possible? Here are assembled those who are engaged in daily competition, one with the other, each endeavoring to obtain that for which his neighbor is striving, and yet retaining for one another a friendship that induces meeting around this festive board to do honor to one of their own number, who has most signally deserved all honors than can be

heaped upon him. You may well be proud, Mr. Supplee, of the record which makes this possible, and we, in turn, can look with hope into the future, now just dawning, to a time when the era of good feeling and brotherly affection will have reached a zenith, and its sunshine will have dissipated all the fogs and mists of doubt, penetrated into all the dark places, dried up all the pools of foul business methods, purified and cleansed the hearts and minds of those in our chosen business, so that the

WHOLESALE HARDWARE TRADE

of the United States may stand before the world, an example of purity, integrity and unselfishness which cannot fail to command admiration, respect and imitation.

We may with profit and interest recall some of the happenings of the past four years. I can well remember some of the first occurrences in connection with the formation of our organization. There were brought together many men who had never before met each other. They came from all parts of this great land, and were animated by different motives in attending. Whatever may have been the motive then, they have, through their wise action at that time, in forming themselves into an association with the avowed intention of fostering and encouraging friendly relations among themselves, and in selecting you as their executive head, builded wiser than they knew. Like all similar bodies from the commencement of time, its existence or demise depended upon

A COMPETENT PILOT.

Its membership at the commencement was small—only 28, if I remember rightly. Now it can claim 170, with others knocking at its doors, and it has the satisfaction of knowing that it embraces nearly all in the country that are entitled to membership. It has, therefore, gained the confidence and support of those directly interested, but it has done even more than this, for it has gained the respect and good will of manufacturers, as is strongly evidenced by the kindly expressions of several upon a very recent occasion. It has given to many members improvements in their methods, through the unselfishness of others who had given these matters thought and study for years. It has raised the standard of business integrity, and, in many directions, has pressed forward to the goal of a "high standard of business methods" which you have so earnestly and persistently advocated. It has protected the interests of its weakest member as well as those of its strongest. It has pointed out ways in which its individual members could benefit themselves by following the precepts laid down. It has proven itself a welcome adviser to intelligent manufacturers, and it has carefully avoided undertaking tasks that were not within its province. In all this, yours, Mr. Supplee, has been the guiding hand, yours the mind to plan, yours the brain to think. You have given unselfishly of your time and thought. You have made personal sacrifice. You have honestly administered the trust reposed in you. You have been weighed and not found wanting. Can we do less than honor you?

THE FUTURE POSSIBILITIES.

It may be a source of satisfaction to you to consider a moment the possibilities of the future for this infant that you have cared for, and which you have safely brought to a point where it may stand alone. I think I see in its future only continued progress and success. The object of its creation was the promulgation of the gospel of friendship among business competitors. The attainment of this object must now be the care of those in whose charge it has been placed. In preaching the gospel of good tidings a wise course is pursued, by impressing it upon the mind when immature. It is absorbed as a part of the daily training and eventually becomes a fixed principle at maturity. The same course must be pursued with the gospel that we have to preach. We must work, not only for the present, but for future generations. Those of us who are to-day active men of affairs will in time, and many of us in a short time, be relegated to obscurity and the grave. Therefore, the principles which

we believe to be right should be carefully impressed upon the minds of all connected with us, no matter in what capacity. We can gain much by making a belief in, and adherence to, the principles of the National Hardware Association a part of the education of every one connected with our establishments. The order boy of to-day may be the proprietor ten years hence. What better heritage can we give him than an education to a high standard of business methods—an admiration for all that is honest and upright, a contempt for dishonesty, low trickery and actions sometimes accounted smart? May we not right-fully hope for progress in this direction?

Whatever the outcome of the future may be, Mr. Supplee, you must have a feeling of satisfaction with yourself that partially compensates for the time and thought that you have given to the service of the trade. To a high minded man, this is a greater reward than money compensation or honeyed phrases of admiration.

TOKEN NOT MEASURE OF ESTEEM.

Our association, however, is not willing that you should pass from the position that you have occupied so honorably for the past four years without some slight token of appreciation of those services. A committee was appointed at Milwaukee to procure a suitable testimonial, with which they desire to present you on this occasion. I trust you will accept it as intended, not as a measure, but as a token of the esteem in which you are held by your associates of many years, your competitors and yet your friends. It carries with it our belief in you as a capable, honorable, broad minded, manly man.

For the National Hardware Association of the United States,
H. H. BISHOP, President.

Address by A. D. Clinch.

The next speaker was A. D. Clinch of Underhill, Clinch & Co., New York, who was actively identified as a representative of the National Hardware Association in the procuring of a testimonial, which at the conclusion of his address on their behalf he presented to Mr. Supplee. Mr. Clinch spoke as follows:

I thank you for the kind invitation to be your guest this evening. It has not heretofore been my privilege to be seated at the guest table at the dinners of the Hardware trade, for at those held under the auspices of the Hardware Club of New York which have been under my care I have had to sit at the tables on the floor among the laymen. But I enjoy the change. I felt honored when notified by the National Association of my appointment on the committee whose labor of love will be completed to-night.

I am sorry to be the sole representative of the committee to-night. This noon I met our chairman, George J. Loughton, and he desired me to convey his regrets because of his inability to be present to-night, and added that while I was enjoying the company he would be engaged in duties which called him to New Britain. Another member, Charles L. Turner of the Albany Hardware & Iron Company, was also unavoidably detained at home. You know the sad cause of the absence of the other member, John R. Griffith, who lost his father by death yesterday.

And now to the pleasant duty which called me here. I hold in my hand an album in which can be read the following address:

Testimonial Address.

To William W. Supplee of Supplee Hardware Company, Philadelphia.

Sir: A meeting of Hardware jobbers assembled in the city of Cleveland, Ohio, on December 14, 1894, because of the strong and growing competition between themselves, intensified by the tendency of the manufacturers to sell direct to the retail dealers and consumers. At this meeting it was the unanimous opinion that the best means to correct the evils growing from these causes would be a National Hardware Association of the United States, which should embrace within its membership all Hard

ware jobbers in the country, and that if such a membership could be obtained it would command the respect of all and be a strong lever in negotiating with the manufacturers.

PERSISTENT ENERGY AND EXECUTIVE ABILITY.

Such an organization was formed and incorporated, and its first honors were conferred upon you by a unanimous election to the office of president. To you all had turned as the embodiment of that persistent energy which, combined with executive ability, makes for success. You accepted the office, and at once entered upon the discharge of its duties and gave your personal attention to the various details of the large amount of work necessary during the formative period of such an association. This work proved of an exhaustive character, but with that intense interest and good judgment so characteristic of your life, you still continued to so guide its affairs that the National Hardware Association was brought to its present position, so exalted in the estimation of all having dealings with it.

SELF SACRIFICE.

After three years of service and against your wishes and protests you were re-elected president in 1897, because new and important questions had arisen which called for a sound and conservative judgment. It was with deep regret that the association learned from you at the annual convention held in Milwaukee, Wis., November 16, 1898, that the pressing necessities of your business made it obligatory upon you to no longer continue its president.

LOVE AND ESTEEM.

The association desiring to testify to the love and esteem in which you are held by it, appointed a committee to present in some tangible form a testimonial which should be a token to the present and coming generations of that love and esteem which are cherished by all but are procurable only by merit, and in the discharge of that duty the committee, in behalf of the National Hardware Association, present to you the accompanying service of silver.

The committee take advantage of, to them, the welcome opportunity offered by the duty imposed to express to you their personal sincere regard and respect.

GEORGE G. LAUGHTON, (Chairman).

CHARLES H. TURNER.

JOHN R. GRIFFITH.

ALFRED D. CLINCH.

} Committee.

The Album.

The album presented was the work of John G. Lee of New York and was an excellent example of classic illustration. The first page contained Mr. Supplee's portrait in oil surrounded by the dedication. The address began on the second page, which had a border of oak leaves, signifying the strength of the National Hardware Association. The third and fifth pages were illuminated in the style of Mediaeval Arabesque, the fourth page in the national colors. The sixth page contained the conclusion of the address and the names of the committee. The book was bound in seal and the covers lined with maroon watered silk. The album was a beautiful work of art and highly creditable to the taste of the committee.

Mr. Clinch then presented the silver and it was carried around the room by two of the pages of the Union League Club, which enabled those present to enjoy the handiwork of the silversmiths.

Mr. Supplee's Acceptance and Address.

When Mr. Supplee arose to reply to the address he was greeted with very sincere and hearty applause, and his speech was listened to with much interest and received with expressions of appreciation:

I thank your efficient president and toastmaster, Mr. Ritter, for his kind and complimentary words, and no one can regret more than myself that it has not been possible for President Bishop of the National Hardware Association to be present on this occasion.

This banquet so generously tendered by members of your association, and which you have so thoughtfully arranged to have extend beyond the limits of our members, is indeed most gratifying, and I sincerely thank you. Your gracious act of courtesy to the members of the committee from the National Hardware Association, with which my name is so indelibly connected, has given them the opportunity amid these delightful surroundings, and in the presence of my many friends, to fulfill a mission intrusted to them of making this presentation, and places me in a position where no adjectives can be collected and arranged in a chain of thought which can express my appreciation of your combined kindness.

And, gentlemen of the committee of the National Hardware Association. I thank you for the kind words and sentiments expressed and I appreciate the friendly motives that inspired them, and wish it was within my limited powers of oratory to respond in equally eloquent form, for you have touched a chord of intensity which in its vibrations reaches and includes all the officers and members of our association.

And, gentlemen of the committee, please say to the members of our association that I accept this commendatory address and this exquisite and beautiful present of silver with sincere and heartfelt thanks, and further say to them that I will through my whole life cherish with an intensity of feeling and appreciation this gift as a further mark of the good will, confidence and esteem which have always been shown me both personally and as president of the association.

NECESSITY OF CO-OPERATION.

It was not without much reflection and anxiety that I accepted the position so recently vacated, and while I may not at first have realized the full extent of the responsibilities, I did realize the fact that without the cordial support and full co-operation of our members the work undertaken could never reach the beneficial results desired and expressed in the text of our Constitution and By-laws, which read as follow:

"The object of the association shall be the promotion of more friendly business relations, and mutual confidence and good will with each other and with manufacturers."

JEALOUSIES AND ENMITIES.

We found the untrodden paths of friendship tangled with a wild overgrowth of local jealousies, we found it necessary to unlearn the lesson that competitors in trade were necessarily enemies, we found that traditional jealousies and enmities should be harmonized. Nor would it have been possible for your president, or any other president, to have harmonized these conflicting elements without the hearty and full co-operation of both the officers and members of the association. In this the members have worked shoulder to shoulder together until almost the last semblance of jealousy and suspicion has been removed.

ENTHUSIASTIC SUPPORT.

Governor Roosevelt, Colonel of the Rough Riders, was called upon after his return to New York by a committee from the Rough Riders, who complimented him highly upon his bravery at the battles of El Caney, and especially on the thorny slopes of San Juan. He answered by saying it was in self defense, for had he halted he would have been trampled under foot by the perfect cyclone of enthusiastic followers in his regiment of Rough Riders. So the aid and support given by our members to your president and officers has spurred them forward in the noble work that was undertaken, and which our president, "Bishop," will continue, for I predict that in him you have found a leader who will add luster to our association.

EQUITY, JUSTICE AND LIBERALITY.

The broad principles we advocate are equity, justice and liberality. We do not offer the fascinating allurements of allotments, combinations or trusts, nor have we the binding conditions which hamper individuality; each member or firm have equal rights, equal benefits

and reserve the right to conduct their own business. We also fully recognize the right of manufacturers to establish their own prices to both the wholesale merchant and the retail dealer, and we feel that in justice to manufacturers jobbers should maintain these established prices for an equal quantity of goods. And through this policy we have not only cemented together our members, but all liberal and progressive manufacturers are uniting in the golden links of the chain of friendship and joining in the effort to maintain a high standard of trade ethics.

RETROSPECT.

Looking back over 122 years we were a nation of 3,000,000 people. The system of our liberal immigration laws during the intervening period has had the effect of bringing to our shores many millions of deserving, intelligent and capable people. These with the descendants of all have given us an estimated population of 75,000,000, so to-day we have the capacity to produce, and are producing, from our varied and productive soil and from our various manufacturing industries far more than can possibly within ourselves be consumed. And it is eminently fitting at this time to refer to the manufacturers' influence in aiding the nation's development, for the extent to which they have contributed to our nation's happiness, its wealth and prosperity, is of no small dimensions.

We must not overlook the fact that with this increase of population there are millions less fortunate than those engaged in agricultural pursuits, who, in order to make a united and contented people, must in some way be provided with employment. That problem can only be solved through the capabilities of our manufacturers, who during the last few years especially, with their characteristic energy, intelligence and ingenuity, have through improved machinery, and with other modern appliances, reached results which place them as formidable and successful competitors with any nation in the world. It is a trite saying that when our farmers reap the full reward of their labors, and when our iron industries are fully employed, our nation is always prosperous.

ENORMOUS EXPORTS.

Statistics are always dry reading to the average man, and the gigantic and amazing figures during the past few years have been but flippantly read and thrown aside. They read that the excess of exports over all imports for the year 1896 was about \$300,000,000, in 1897 we had increased this to \$340,000,000, and for the calendar year 1898 to over \$615,000,000.

But what does all this mean? It means that we have exported during the past year some 200,000,000 bushels of wheat, over 200,000,000 bushels of corn, over 7,000,000 bales of cotton, and that our manufacturers have exported an average of \$1,000,000 worth of their products for every working day of the calendar year, making a grand total of \$1,250,000,000, which is over \$200,000,000 greater than in the banner year of 1892, and far in excess of any period in our history.

The last available census returns show that there were over 5,000,000 employees engaged in manufacturing establishments. After these manufactured goods leave the factory doors or warerooms they percolate through 500,000 small to large trading concerns, scattered all over the United States, in which it is estimated there are employed over 2,500,000 people, and in the language of the Queen of Sheba, as she stood before Solomon in all his glory, "The half has never been told."

AN EVENTFUL YEAR.

The past year has been a memorable one in the history of our nation, and surprising changes and startling events have taken place with kaleidoscopic rapidity.

Occasional amusing incidents are related in connection with the war. The wife of a returned soldier, embracing her husband, said: "Camp life wasn't a bit like

home, was it, husband, dear?" "Well, dearie, the cooking was about the same, but we didn't have any actual warfare, you know." They were then interrupted by a tramp, who entered and asked for supper. "Well, I am willing to give you something to eat," said the woman, "but it does seem to me that a great, strong, healthy man like you ought to have been fighting for his country as my dear husband was." "Well, mum, if you'd walked over this country as much as I have, and know'd how big it was, you wouldn't want to add no islands to it; I've kept out of this war on principle."

General Sherman said in his emphatic and forcible language, "War is hell." I have always been willing to believe him without looking for further proof, having had no experience in either, and I find the older I grow the more inclined I am to keep out of both of them.

General George Washington, without whom our poor and feeble colonies might perhaps never have gained their freedom, after untold sufferings, hardships and sorrows of the six years' campaign, in his farewell address said: "It will be worthy of a free, enlightened, and at no distant period a great nation, to give to mankind the magnanimous example of a people always guided by an exalted justice." Washington, it would appear, had a good conception of what might occur—indeed, has recently occurred—to this nation. Nor does it follow that exact duplicates of what have been in the past must always be in the future. While history and experience are guides by which to direct our footsteps, they should not be manacles to chain us to an immovable past.

EXPANSION.

General Andrew Jackson, the hero of his day, and Thomas Jefferson, the eminent statesman, both Presidents of the United States, and of one political belief, ex-President Benjamin Harrison and President McKinley, differing from the first two politically, all believe that we had outgrown the swaddling clothes of 13 States and 3,000,000 people, and all have favored extension of territory. In fact, Mr. President and gentlemen, with the exception of England we have been the greatest colonizing nation and the greatest expansionists of the world. If this be not so, what mean those 44 stars, where but 13 existed in that banner of liberty, the emblem of our nation, the American flag, and what mean the 3,600,000 square miles of territory where 325,000 originally existed, or the 2,200,000,000 acres of land where 200,000,000 originally existed?

We obtained Louisiana and Alaska by purchase, first occupied Florida by force, took California and New Mexico, including in our grasp Nevada, Utah and Arizona, as spoils of war, annexed Texas and Hawaii by joint resolution, and Porto Rico and the Philippines, which we now occupy as colonies, come to us jointly by conquest and the spoils of war. Nor was this the first time in the history of nations that the simple reply, yes or no, has changed the map of the world.

EXPANSION IS NOT IMPERIALISM.

Expansion opens the doors for manufacturing and commercial outlets. Great Britain has always recognized this fact, and every opportunity finds ready response with the British Houses of Parliament. But recently the manufacturers appealed to Lord Salisbury to intercede with the United States that their commercial tradings in the Philippines might be protected. Germany kept her men-of-war at the very doors of Manila, hoping for some excuse or opportunity to gain ascendancy whereby she could secure a foothold for the purpose of commercial and manufacturing supremacy.

THE WAR WITH SPAIN.

For many years, and through several administrations, this nation tried to avert a war with Spain. All efforts in diplomacy failed: war became inevitable. The destruction of the battle ship "Maine," through which 260 of our brave men lost their lives, was but one of the distressing incidents in the course of events, and the \$300,000,000 cost of the war for the fiscal year is but one of

the results. And while it is no new theme for foreign countries to both write and talk the theories of humanity, the war with Spain was the first and only one in the history of the world where a nation offered up the lives of their own brave men and their hard earned treasures solely in the interests of humanity.

In obedience to the laws of neutrality Commodore Dewey was ordered by the Chinese Empire to leave Hong Kong. He cabled for instructions, The Secretary of the Navy replied as follows: "Proceed to the Philippines, take or destroy the Spanish fleet." In obedience to orders he reached the Philippines, passed unharmed the forts of Manila Bay, and captured and destroyed 13 Spanish men-of-war without the loss of a single man, in less than three hours. In process of time Cervera's bottled fleet in their effort to escape from the Harbor of Santiago were attacked by Commodore Schley, with Admiral Sampson's well ordered fleet, and he destroyed the entire Spanish fleet in less than one hour.

Our army showed no less courage. They landed in Cuba with but one-fourth of the force of the Spanish soldiers on the island, and against the odds of Spain's smokeless powder, better arms and their poisonous copper cartridges, suffering from the hot rays of a tropical sun, fought on the hills of San Juan with an inspiration of courage which gained the admiration of the world, and in 40 days from the day our army landed in Cuba compelled the surrender of Santiago, and thus that campaign passes into history challenging in comparison the battle of Waterloo, in which all of Napoleon's former reputation was annihilated. And after the fleets of the Spaniards were destroyed, and the guns of Manila and Santiago had ceased to fire, some 10,000,000 souls were released from perpetual bondage.

NO OTHER ALTERNATIVE.

The echoes of our late Peace Jubilee are still ringing in our ears, the effects of the National Anthems sung by over 3000 of our public school children, and the huzzas from the throats of a million enthusiastic people, who did honor to the heroes of the Navy and Army, are still tingling through our veins. And while the mission of the United States was for the sake of humanity and civilization, there is no other alternative than for us to accept the responsibilities and the inexorable results which the war has brought upon us; and while citizens may at the present moment differ as to the benefit of these islands, I believe that future generations will applaud the wise diplomacy of our President and Peace Commissioners, who secured a treaty which takes the sovereignty from Spain and prevents the possible scramble of other nations, and enables us to exert and extend our influence and authority over 150,000 square miles of territory, and 7000 straight miles to the gates of Asia, the scene of the present European contest for ascendancy for commercial purposes, all conscious of the fact that the opening of the Chinese and Eastern markets will give almost unlimited opportunities.

The average American loves bravery and brave men, and the war with Spain ended with new names in the galaxy of heroes. The names of Dewey, Schley, Sampson, Miles, Merritt, Shafter, and the always popular Major-General, called the "Fighting Cock of the South," Joseph Wheeler, with many others who cannot be mentioned in these few moments, including Hobson (whose bravery was not diminished by his stolen kisses), will always stand conspicuously dear in the hearts of all true Americans.

GREATEST OF NATIONS.

And, gentlemen, when the sun passed out of sight below the horizon December 31, and the hands of the new clock upon the tower of our City Hall pointed to the hour of midnight, the clock for the first time struck the hour of 12 and a thousand bells of our city rang out the old year, the books of our nation for the year were closed, but the pages will show that the golden harvests from our productive soil, the yearly radiant glow of our

Southern cotton fields, the hidden and untold wealth of our gold, silver and copper mines, the vast areas of coal and iron ore beds, the spouting oil from the bowels of the earth, the wonderful and successful achievements of our manufacturers, the abundant available and ample capital to develop and promote manufacturing and commercial enterprises, places us before the world as the greatest and most favored nation of God's grand universe.

Address of William Waterall.

After a song by J. F. Braun, William Waterall, a prominent and highly esteemed citizen of Philadelphia, in the absence of W. W. Foulkrod, made an eloquent address, alluding felicitously to the circumstances of the occasion and calling the attention of the assembly in a broad minded and convincing way to some of the great principles underlying national welfare.

The Future of the Country

was the subject which was discussed by George Bartol, president of the Bourse, in a carefully prepared address, which was listened to with interest and received with appreciation. At its conclusion a song was rendered by the Supplee Quartette, after which Fayette R. Plumb spoke as follows, representing the Hardware Merchants and Manufacturers' Association of Philadelphia:

Mr. Plumb's Address.

It is a great compliment to be selected by the members of this organization to respond for the manufacturers. It has a double meaning to-night, because of the one whom we have chosen to honor.

During a business experience of nearly 30 years it has been my great pleasure to be intimately associated with him, not only in the relation of manufacturer and merchant, but as my employer, my adviser and my friend.

His keen business judgment, coupled with his warm heart, have enabled me to confer with him without constraint, and it has always been a comfort to know that the advice sought would be able and thoroughly trustworthy.

TRIALS AND VICISSITUDES.

Like all successful men who have hewn their way to fame and fortune, his early life was full of trials and vicissitudes. Leaving Philadelphia as a mere boy, he emigrated to the great West to commence his business career and settled on the banks of the Mississippi River, at what was then a frontier town. The city of La Crosse was a mere village, and the Hardware establishment started by Lloyd & Supplee was one of six others in that growing town. This place was made up of progressive business men, and Lloyd & Supplee soon took rank with the foremost. This was fully demonstrated by the fact that during the first few years there they absorbed the stocks of most of their competitors, and when they left Wisconsin to take up their residence in our city they had next to the largest business of any house in the State.

MR. SUPPLEE'S ASSOCIATION WORK.

When Mr. Supplee was selected as president of the National Hardware Association I felt, therefore, perfectly confident that its affairs would be in the hands of one whom the members would be proud of and one whose management would be marked with conservatism, and whose direction would be resourceful and masterful.

It is a source of pride and gratification to know that my judgment of him has been more than realized. He has not only handled the affairs directly pertaining to his association with great executive ability, but he has also endeared himself to the manufacturers by the course pursued toward them. The feeling of antagonism that existed during the first year of his presidency has given way to one of respect and esteem, as they have learned to realize that it has been his idea to work in harmony with them.

MANUFACTURERS' RECOGNITION.

Under the circumstances, it is only natural that they should not allow an occasion like this to pass without recognizing his services.

I have the honor then, Mr. Supplee, to present, on behalf of the manufacturers, this souvenir as a token of their high regard, appreciation and respect for the wise counsel and friendly help so graciously extended to them.

It is their sincere desire that the balance of your life may be made up of all the comforts and pleasures vouchsafed to those whose works have entitled them to days of restfulness and peace, and that you may carry in your heart kind remembrances of the givers.

At this point the handsome chime clock was unveiled and formally presented to Mr. Supplee, who responded as follows:

Mr. Supplee's Response.

If the manufacturers have made any mistake in the man to whom they have given this elegant and beautiful present, they certainly have made no mistake in the oratory of the gentleman delegated to make the presentation speech, and I thank him.

Prince Bismarck, who was Germany's greatest statesman and who has the credit of having founded the German Empire, spoke fluently seven languages, but it is stated that at a banquet he was able to keep silent in all of them. But if Prince Bismarck was now alive, with all due respect to his memory, I would challenge him or any other prince to keep silence on an occasion like this. But, Mr. Plumb, what can I have you say to the manufacturers you represent, beyond the simple words that "from the bottom of my heart I thank them?" In this historic banquet hall many Presidents of the United States have been feasted, and many army and navy officers in gilded uniforms and eminent statesmen have responded to toasts. Oh! that their echoes were still clinging to these walls that I might gather inspiration from their flow of eloquence and wit suitable to the occasion.

But, Mr. Plumb, you will please say further to these gentlemen that during my 35 years of intercourse with manufacturers this is the first time when a debt became due that I felt it could not be paid in full, but in this instance I cannot fully liquidate the obligation, for I am bankrupt in words, and while my heart is full it would require the eloquence of Demosthenes or Cicero to analyze and announce the contents.

A REMINDER OF HARMONY.

This beautiful clock gives the record of time, but kindness like this cannot be paid in time promises, and while its delicate machinery goes on tick, thankfulness and gratitude cannot be repaid on tick, and as the world revolves on its axis the clock indicates the day of the month, but good fellowship cannot be repaid in monthly installments. But whether its melodious chimes chant the passing hours of the bright days of spring or during the cold blasts of winter, or during the dark hours of night, the sound will always be to me a reminder of the harmony created between the members of the National Hardware Association and the manufacturers you represent.

This timepiece, with the delightful history attached, is one that will be handed down to future generations, and I feel it will always be held by them, as it will be by myself, in kind remembrance of the givers to one who but stood at the helm in the work and welfare of our association, and in behalf of our officers and members as well as myself, I again thank you.

These gentlemen and friends who have during the evening (since I before spoke) responded to toasts and spoken in such laudatory and eulogistic terms of myself (many of which virtues I had never heard of before) remind me of a friend who at a banquet once requested that if there were any manufacturers or jobbers present who were fully satisfied with their lot to please hold up their right hands, but there was not a hand to be

seen. Now, this evening I feel that I could hold up both hands, but before doing so I would like that a committee of one be appointed to investigate some of these complimentary and eulogistic remarks and see if these gentlemen are not mistaken in the man; besides, there may be two sides to the question. The committee can report at a later hour. Until that time, gentlemen, I thank you.

Other Addresses.

After brief addresses by R. R. Williams, J. H. Kennedy and Wm. C. Peters the company separated after a most enjoyable evening. The committee in charge of this very successful affair consisted of J. H. Van Newkirk, Samuel Disston, Henry W. Scattergood, Ellicott Fisher and Fayette R. Plumb.

Souvenir Menu.

The souvenir menu was elegantly printed and contained an excellent half-tone portrait of Mr. Supplee, from which the portrait herewith given has been made. On the last cover was an engraving giving a view of the Union League Club of Philadelphia.

Hardware Organizations.

Iowa Retail Hardware Dealers' Association.

The annual meeting of the Iowa Retail Hardware Dealers' Association will be held on February 8 and 9 at Des Moines. The Savery House has been selected as headquarters, at which place special rates have been secured. The membership of the association is now 115 and a number of accessions are expected. The following circular, which supplies information in regard to the meeting, has been issued by H. A. Cole, secretary of the association:

COUNCIL BLUFFS, IOWA, January 14, 1899.

You are invited and urged to attend the meeting of the Iowa Retail Hardware Dealers' Association at Des Moines, February 8 and 9. Our membership is now 115 dealers, and a large number of others to whom we have written have signified that they will be present.

Let us hear from you on the inclosed postal card whether you will be present or not, as we cannot get one and one-third rates unless 100 dealers are present, and we must have your answer by return mail to compute the number. It costs \$17 to have the joint agent there and takes time for the Passenger Association to notify the State railroads. We can promise one and one-third fare for the round trip if 100 dealers are present.

A paper will be presented by the secretary of the Minnesota Retail Hardware Dealers' Association, which is one of the most vigorous in the country, on what their association has done for its members. Another paper will be presented on "How to Drive Out the Range Peddlers, and What Is the Best Way to Meet Catalogue House and Department Store Competition," by one of our own members.

The second day will be devoted to a Question Box, and we urge you to file with the secretary, any time between now and the time of the meeting, any practical questions which you want answered by the dealers of the State who have had experience on the points involved. A committee will codify these questions, and on the second day of the meeting the questions will be read to the members and answered in three-minute speeches by whoever can do so. The points brought out by this question box are of inestimable value to every dealer who will attend.

We urge you to send in your application as a charter member, together with \$3 yearly dues, or you can send in your application and pay your dues at the meeting, as you see fit. Special rates of \$2 and \$2.50 per day have been obtained for the members of the association at the Savery House, a \$3 hotel. We expect to form a strong organization at this meeting and elect permanent officers, so that we can drive the range peddlers entirely out of the State, as the first thing to be done, and accomplish

many more practical results for the welfare of our calling.

We are invited to join the Northwestern Hardware Dealers' Association and can count on the co-operation of all the older State organizations to help us mitigate the evils threatening us. Every dealer in the following cities are members: Council Bluffs, Keokuk, Burlington, Fort Madison, Davenport, Muscatine, Clinton, Cedar Rapids, Fairfield, Mount Pleasant, Washington, with probably one or two exceptions, and we hope to add Des Moines to the list before the meeting.

Yours truly,

H. A. COLE, Secretary.

North Dakota Retail Hardware Association.

The members of the North Dakota Retail Hardware Association will come together in annual convention on Wednesday, February 15, at Grand Forks. Every Hardware dealer in the State is urged to attend, whether a member of the association or not. The association is especially desirous of having non-members in attendance, that they may understand the work which is being done more fully. We are advised that the railroads have granted a special low rate. The officers of the association are expecting a large representation of the Hardware merchants of the State, as it is a time when business is likely to be very quiet. C. N. Barnes, Grand Forks, is secretary of the association.

St. John Iron and Hardware Association.

The fifth annual dinner of the St. John Iron and Hardware Association was held at the Royal Hotel, in that city, on the 19th inst., and proved to be a most enjoyable affair. The president of the association, R. B. Emerson, presided. The tables were elegantly decorated and an excellent menu was provided. The toasts were seven in number. The Queen was toasted with musical honors. "Our Association," proposed by the vice-president, Thomas McAvity, was responded to by the president. "Our Sister Associations," offered by the president, was responded to by W. H. Thorne and J. Henderson of Halifax. "The City of St. John" was the subject of addresses by Mayor Sears, ex-Mayor Robertson and D. J. McLaughlin. The toast of "Iron and Hardware Manufacturers" was responded to by T. McAvity, W. H. Thorne, Oscar White, George McAvity and P. McMichael. "Our Guests" came next, and W. M. Jarvis, Joseph Henderson, Oscar White, Geo. Robertson and W. H. Trewartha-James of London responded. Geo. Beverly, H. R. Rogers, Oscar White and others responded to the toast "The Ladies." Harrison's Orchestra played a choice programme of music, and during the evening there were songs by John Keefe, J. P. Macintyre, H. R. Sturdee, Frank Watson and others.

Requests for Catalogues, Quotations, &c.

W. M. PATTESON is making preparations to open a Hardware store in Penn Yan, N. Y. He is desirous of hearing from the trade with copies of catalogues, &c., and information as to prices.

Gregg & Barrel, Standard Buildings, Joubert N., P. O. Box 938, Johannesburg, South African Republic, are desirous of obtaining catalogues of American manufactures, with prices quoted f.o.b. New York. The members of this firm are Americans. They mention among other lines about which they desire to be advised, Household Hardware, Office Specialties, Metal Goods, Novelties, Electrical Devices, &c.

Geo. W. Myers, South Bend, Wash., has moved his stock to new quarters, which double his former shelf and floor room. His tinning and plumbing shop capacity has also been doubled. The new location is more central than the old.

Points in Regard to Export Trade.

C. K. TURNER, 76 Broad street, New York, manufacturers' representative for export, while discussing existing conditions of foreign trade, alluded especially to the following features:

Manufacturers' Enlarged Views.

American manufacturers are waking up to the fact that this country produces much merchandise for which there is a good market abroad. Foreign shipments are augmented by better packing, which insures the delivery of goods at destination in better shape than formerly. Excessive charges for packing, drayage and other incidental expenses are the exception now instead of the rule. A more intelligent general treatment of export orders by manufacturers in following explicit directions accompanying orders brings fewer damage claims from foreign buyers and saves much irritation and annoyance.

Mailing Samples.

Manufacturers as a rule are showing a more liberal spirit in furnishing samples to be sent abroad, by mail or otherwise.

To illustrate some of the advantages obtained by a judicious distribution of samples, the following was told: A tool used by every carpenter is wrapped with illustrated descriptive circular, list price and actual trade discount in a corrugated pasteboard tube, and sent to possible purchasers anywhere in the Postal Union for 3 cents, printed matter and letters being in the language of the country, principally Spanish, Portuguese, German, French and English. All sorts of samples in common use that it is feasible to mail are now sent broadcast, especially to South America, Central America and the West Indies, and this is producing most excellent results.

Letters, Trade Literature, etc., in Buyers' Language.

Where for any reason samples cannot be sent catalogues are mailed, but always in the language peculiar to the country. In the main goods are put up, packed and labeled to meet the views of the foreign merchant, the labels and stencils on original packages being in a language he can read.

Ten Years' Progress.

Looking back at the past through an experience of 30 years in exporting, he referred to prevailing conditions ten years ago, when in outfitting travelers and commission salesmen for foreign trips they would get stacks of invoices for samples on memorandum, which meant invariably they must be settled for. While even now this is not all done away with, the progressive manufacturers realize the advantage of a sample over a printed book, where it is practicable to send a sample.

Quicker Transportation and Lower Freights.

One of the aids to a greater volume of business he mentioned was steamer freight against sail freight, and much lower rates to South America, South Africa, Australia, New Zealand and the West Indies.

Advantage of Getting Goods in Foreign Warehouses.

Once an article is introduced in a measure it holds its own, and a single experience will illustrate the point. The low prices and low freights of a year or so past built up a desirable business in a commodity used everywhere and made largely in this country. Not many months ago a combination on these goods was made, and exporters supposed the trade was lost, as prices advanced from \$2 to \$3 a dozen, and what formerly was \$3 became \$4 a dozen for the cheaper grades. This staggered the trade for two or three months, although stocks in hand probably had something to do with a falling off in orders, but at the end of that period Buenos Ayres, Havana and other markets began again to take the goods at the new prices, sometimes in lots up to 2000 and 2500 dozen at a time. This is attributed to our superior style, finish or quality, otherwise Mr. Turner said a half of 1 per cent. would divert the traffic to Europe.

THE ENAMELED WARE SITUATION.

ARTICLES of incorporation of the National Enameling & Stamping Company, who were organized at the office of the New Jersey Corporations Agency in the Hudson County Bank Building in Jersey City, were filed in the office of the Secretary of State at Trenton January 21. The capital stock is \$30,000,000, of which \$10,000,000 is 7 per cent. cumulative preferred and \$20,000,000 common stock. Of the total capitalization \$8,000,000 of the preferred and \$13,000,000 of the common stock will be issued at once, and the balance will remain in the treasury for the present. The incorporators named in the articles are Charles N. King, manager of the Corporations Agency; Charles Marchbank and Albert S. King, all of Jersey City, but it is understood that they only represent the real capitalists who are in the trust.

National Enameling & Stamping Company.

Samuel Untermeyer of the law firm of Guggenheimer, Untermeyer & Marshall, counsel for the trust, made an explanatory statement of the reasons for forming the trust. He said:

This consolidation is the outcome of a long litigation over the validity of patents which control the manufacture of one-coated enameled ware. For some time past the St. Louis Stamping Company, owned by the Messrs. Neidringhaus, and the Lalance & Grosjean Mfg. Company have been in litigation with the principal manufacturers of enameled ware over the right of the latter to manufacture one-coated enameled ware. Owing to the recent discoveries in the art, the cost of producing this kind of goods has declined to about one-third of what its price was five or six years ago. In consequence of this reduction the consumption has increased enormously.

The new company have acquired the plants of the St. Louis Stamping Company, owned by the Messrs. Neidringhaus and located at Granite City, Ill., across the river from St. Louis; Kieckhefer Brothers Company, Milwaukee, Wis.; Matthal, Ingram & Co., Baltimore, and the Haberman Mfg. Company, Berlin Village, L. I., and Brooklyn. These four concerns will control the bulk of the output of Enamel Ware and are the largest manufacturers of Tinware. The company also acquire the rolling mills of the St. Louis Stamping Company and a lease of the Tin Plate works. There is no intention to increase the price of the goods. The saving in freight charges on the bulky articles in which the company will deal and the economy in marketing the goods will in themselves pay a large dividend on the capital stock without increasing the prices. The policy of the company will be one of great liberality to the jobbers. The factories of the company are so located as to constitute ideal distributing points. The officers of the new company will probably be selected this week. The consolidation will do away with all litigation over the patents and will give to the new company a lawful monopoly of the business through the ownership of all the modern inventions for manufacturing Enamel Ware.

The statement of Mr. Untermeyer concerning the withdrawal of all suits for infringement in the manufacture of one-coated Enamel Ware is contradicted by the Lalance & Grosjean Mfg. Company, who, with the St. Louis Stamping Company, own the patent.

Lalance & Grosjean Mfg. Company.

The Lalance & Grosjean Mfg. Company state that they do not form a part of the new Enameled and Stamped Ware trust, nor have they any intention of joining it. Moreover, it is not true that all litigation will end; on the contrary, suits that are now pending will be prosecuted as vigorously as possible. One of their reasons, as we understand it, for not joining the trust is their position in the trade and their special facilities for producing this class of goods, as the pioneers in this country in the Stamped and Enameled Ware business, and the fact that during the past 48 years they have brought their facilities of manufacture to that state of completion that they are capable of turning out anything in the Enameled and Metal Ware lines—producing, as they do, their own raw materials. They also make the point that with their rolling mills at Harrisburg and extensive works on Long Island—in which they have millions in-

vested—they are in a position to turn out as many goods in these lines as the country at present consumes.

National Tin Plate and Stamped Ware Company.

The situation is further complicated, according to advices received just as we go to press that in opposition to the National Enameling & Stamping Company, who were organized last week, the American Tin Plate Company have organized a similar company. At the head of the new company are D. G. Reid, president of the American Tin Plate Company, and W. B. Leeds, first vice-president of the same company. The new company are to be known as the National Tin Plate & Stamped Ware Company. They are capitalized at \$20,000,000. The charter is very broad, and the company have been organized with the avowed intention of operating antagonistic to the National Enameling & Stamping Company.

It is stated that some form of agreement has been reached between the new company and some large operators who were not included in the original combination.

It is said the formation of the new company was the outcome of a disagreement between the tin plate magnates and the enameled ware people regarding the supply of raw material. As we understand the affair, the enameled ware operators made certain demands regarding the furnishing of plates which the tin plate representatives thought exorbitant and refused to concede. Consequently the former concern threatened to build tin plate mills, and as a counter move the tin plate operators intend to enter the enameled ware business.

Simonds Mfg. Company.

SIMONDS MFG. COMPANY, Fitchburg, Mass., advise us that they are now in a better position than ever before to meet the wants of the trade, having during the past year materially added to their facilities. In September they opened a new office and repair shop at Seattle, Wash. Not being able to find there just what they required in the way of a building, and finding a lot suitable for their business, they erected a brick store and shop on Jackson street, where they carry a large stock of goods and have a first-class repair shop in charge of men fully competent and familiar with the business—men who have been employed in their Eastern factories for several years. At Chicago they enlarged their Saw plant by an addition, 80 x 80, two stories and basement; also one of 45 x 40, one-story. These additions make their Chicago factory on Seventeenth street 332 feet long, and on Western avenue, about one-half that length. These additions have been put up especially for the Band Saw business, the principal part of which has been moved from their Fitchburg factory, so that all their Western customers will be able to purchase Saws made in Chicago, with the assurance that their orders will be taken care of in the best manner possible. Their Chicago plant is now referred to as especially well equipped, many decided improvements having been made in it. This old established company, with manufacturing plants in Fitchburg and Chicago, with stores at New York, New Orleans, Portland and Seattle, with fully equipped repair shops, and the Simonds Saw Company at San Francisco, are thus in excellent position, on account of the geographical distribution of their several houses, to take care of their growing trade. An important feature of their business, to which they call the attention of buyers in their line, is that all these locations are handled direct through salaried employees of the parent company, so that customers have the same interest taken in the execution of their orders as if dealing direct with the home office.

Dinner to W. C. Reitz.

ON Thursday evening, January 19, at the Duquesne Club, Pittsburgh, a testimonial dinner was tendered W. C. Reitz, for some years secretary of the Bindley Hardware Company of Pittsburgh, but who recently severed his connection with that concern to assume the active management of the Pittsburgh Horse-shoe Company. At the dinner were John Bindley, Edwin Bindley, W. H. Cochrane, E. J. Lloyd, W. J. Mercer and John Reitz, Jr., all connected with the Bindley Hardware Company in an official capacity, and the guest of honor, W. C. Reitz. After the good things had been disposed of, John Bindley in a happy vein delivered a speech in which he conveyed to Mr. Reitz the assurances of the high regard in which he was held by every employee of the Bindley Hardware Company, and assured him that the best wishes of every employee of the house followed him in his new venture. He referred to the fact that Mr. Reitz had been connected with the firm for more than 31 years, and during that time had seen the business grow from a very insignificant beginning to its present mammoth proportions. Mr. Bindley concluded his remarks by presenting to Mr. Reitz, on behalf of those present, a very beautiful clock, with two pieces of statuary. Mr. Reitz responded, thanking the donors for their kindness, and assuring them that their beautiful gift was highly appreciated, not because of its intrinsic value, but from the fact that it carried with it the high regard of those who presented it. Mr. Reitz spoke in a reminiscent vein, relating many amusing and interesting anecdotes of events which occurred during his long connection with the Bindley Hardware Company. Remarks suitable to the occasion were also made by Edwin Bindley, and the pleasant occasion was brought to a termination about midnight. It will long be remembered as a very enjoyable affair by those who were present.

Previous to leaving the Bindley Hardware Company W. C. Reitz was presented by the employees with a handsome diamond ring, the presentation being made by F. W. McLean. Mr. Reitz responded, thanking the employees for their gift, and took occasion to make some remarks which were listened to with much attention. Mr. Reitz severed his connection with the Bindley Hardware Company with the best wishes of every employee from John Bindley, president, down to the errand boy.

Direct Steamers to Northern Russia.

FUNCH, EDYE & CO., New York, who, as agents, manage eight or ten steamship lines to various parts of the world, have recently been appointed New York agents for a line of steamers on a new route, which will be operated by the Scandinavian-American Company of Copenhagen, owners of several European lines plying in the Baltic and North Seas. The new line is designed to connect New York and perhaps Boston with St. Petersburg and other Russian ports on the Baltic, with such ports of call en route as Christiania, Copenhagen, Stettin and Riga.

Departure of First Steamer.

It is the intention now to dispatch the first steamer from here the end of March or beginning of April, which will permit her to reach St. Petersburg by the opening of navigation about May 1, and follow with a steamer every month, which, however, will depend somewhat on the volume of freight obtainable.

Direct Communication with Baltic Ports.

The main feature of this enterprise is that it offers direct freight communication with Russia and some Scandinavian ports. American goods in the past having been transhipped at British or Continental ports, involving considerable delay and increased expense. American trade with Russia has materially increased during the past few years, eight to ten weeks being the usual time required to land goods from this country.

Arrival Here of the First Steamer.

The pioneer vessel of this line, the "Georgios I," arrived in New York, December 15, her time from Riga, Russia, being just three weeks, including a call at Boston to discharge part of her cargo.

While the enterprise is somewhat experimental the company believe that they will find ample freight in the United States, but as yet are doubtful whether full cargoes can be obtained in Russia. However, they believe enough additional freight can be secured in Sweden and Denmark to complete any possible shortage.

New Vessels for the Line to Be Built.

The plan is to replace the vessels now in use by building six new ships for this particular service.

A Russian committee appointed in 1895 to inquire into the reasons for Russia's very small percentage in the export trade found among the causes the absence of regular steamship communication with foreign ports.

Hibbard, Spencer, Bartlett & Co.'s Catalogue.

CATALOGUE No. 6 has just been issued by Hibbard, Spencer, Bartlett & Co., Chicago, after months of elaborate preparation. Their last catalogue was issued in 1895. It contained 1408 pages, including a large department devoted to Lamp goods, which is now discontinued. The new catalogue contains 1600 pages, including the index, thus showing considerable growth. Two editions have been prepared, consisting of a very large size, which weighs nearly 17 pounds, and the regular size, which is two-thirds of the size of the larger and weighs 6½ pounds. The type used in the large catalogue is larger and of bolder face than in the former catalogue, so that in reducing by photo reduction the pages for the regular edition the type and figures are still very plain, and can be easily read instead of being quite small, as usual when such reductions are made. Full sized cuts are used where comparative sizes of goods are shown, also making the regular edition very plain in this respect. The regular edition contains views in colors of the company's main store building and of their warehouse. All plates used are new. The contents comprise the following:

	Pages.
Mechanics' Tools.....	1 to 168
Builders' and General Hardware.....	169 to 654
House Furnishing Goods, Tin Plate, Sheet Iron, Metals and Tinnerns' Tools.....	655 to 956
Cutlery.....	957 to 1164
Silver Plated Ware and Clocks.....	1165 to 1272
Guns, Pistols, Ammunition, &c.....	1273 to 1396
Fishing Tackle.....	1397 to 1456
Sporting and Gymnasium Goods.....	1457 to 1492
Bicycles and Sundries.....	1493 to the end.

The index consists of 45 full pages, and is double and sometimes quadruple to facilitate the work of catching the exact names of the goods. The goods are grouped under leading classes, the noun being printed in large type and the adjective showing the specific article in smaller type below. Nearly 8000 names or leading heads are contained in the index. The catalogue is bound in half morocco leather, with cloth sides and green edges, and each customer's name is printed in gold on the copy sent to him.

The catalogue was compiled by Frank F. Austin, who has done this class of work for the house for eight years. The details of printing were attended to by H. J. McCartney.

The Hardware store of J. H. Wilson, Manchester, N. H., has been destroyed by fire, and Mr. Wilson is now carrying on business in temporary quarters at 140 McGregor street. About February 1 he will remove to Elm street.

George Boole, formerly with Dunham, Carrigan & Hayden Company of San Francisco, and for the last three and one-half years with the Union Hardware & Metal Company of Los Angeles, Cal., is now associated with the Schwabacher Hardware Company, Seattle, Wash.

Sidney Shepard & Co.'s New Enterprise.

INFORMATION has been received that Sidney Shepard & Co., proprietors of the Buffalo Stamping Works, Buffalo, have leased the building 21 Cliff street, and will have complete stock and be fully prepared to do business at this location on May 1 next, thus adding a New York establishment to their chain of houses, now extending across the continent.

This firm are one of the oldest and best known in the country, having been established in 1836, the quality of their goods having an exceptional reputation. They are engaged in the manufacture of Aluminum Ware, Stamped, Pieced and Japanned Tinware, Galvanized Ware, &c., and are large jobbers of Tin Plates, Sheet Iron and other Metals and Tinsmiths' Tools and Supplies. The works of the firm are located at Buffalo, a very advantageous center for the production and distribution of their product.

The Chicago house was established in 1876 and soon took a leading position in the trade of the West, and within the last two years branch houses have been opened in Kansas City, St. Louis, Denver and Seattle, which, together with the Buffalo, Chicago and New York houses, make seven points at which large stocks are carried and which constitute centers of business activity.

Orders are received and goods shipped to customers from the point most advantageously located, and the opening of the New York house will facilitate the handling of their extensive Eastern and export business, which heretofore has been handled from Buffalo. The warehouse is a handsome and commodious one, located in the heart of the metal district.

The firm are about to erect additions to their Buffalo works for the manufacture of Enameled Ware.

In these evidences of continued progress and enterprise this old and popular house will have the best wishes of a host of friends all over the country.

Price-Lists, Circulars, &c.

Manufacturers when sending catalogues, price-lists and circulars are requested to indicate any additions to their line, improvements, changes in price, &c., that suitable reference may be made in the appropriate department of this paper.

THE W. H. CHAPMAN COMPANY, Middletown, Conn., Allerton-Clarke Company, 97 Chambers street, New York, selling agents: Illustrated catalogue No. 11 of Cast Iron and Wrought Iron Padlocks, referred to under Miscellaneous Notes.

FARWELL, OZMUN, KIRK & Co., St. Paul, Minn.: 1899 catalogue of Bicycle Sundries.

IDEAL MFG. COMPANY, New Haven, Conn.: Ideal Hand Book of useful information No. 11, containing recent additions of descriptive matter.

MALLORY-WHEELER COMPANY, New Haven, Conn.: Catalogue relating to Iron, Steel, Brass and Bronze Padlocks, Shelf Hardware, &c. A reference to additions to line of Padlocks is made under Miscellaneous Notes.

Trade Items.

THE AMES & FROST COMPANY, Chicago, manufacturers of Imperial Bicycles, have 25 travelers on the road, and express the opinion that this is more than any other strictly Bicycle house are now employing. These representatives are doing such good work that the company say no year ever promised better. They do not even except the Bicycle boom years 1895 and 1896.

THE D. WILCOX MFG. COMPANY, Mechanicsburg, Pa., are presenting vest pocket memorandum books as souvenirs, calling attention unobtrusively to their line of Carriage Forgings, Bicycle and Special Drop Forgings. The books are bound in celluloid covers, decorated in colors.

It will be observed that a Special Notice signed "Africa" on another page invites manufacturers of Hardware, Building Materials and Specialties to correspond with the advertiser concerning sole agency arrangement in South Africa.

E. C. ATKINS & Co., Indianapolis, Ind., have an attractive calendar, with a background and support of

polished steel with appropriate lettering and design, thus calling attention to their manufactures. The reading matter is stamped into the plate and brought out prominently by black enamel, while the rest of the surface is polished. It is destined for desk use.

In their advertisement in this issue Schoverling, Daly & Gales, 325 Broadway, New York, refer to low prices they are prepared to make on Bicycle Sundries. They invite the trade to send for complete catalogue.

THE YALE & TOWNE MFG. COMPANY will in the near future remove their Chicago branch from 152 Wabash avenue to the Silversmiths' Building, at 131 to 137 Wabash avenue. They have selected a fine suite of rooms on the fourth floor of this building for offices, sample exhibits and the storage of stock. The rooms have been selected with a view to securing as perfect light as possible. Manager R. E. Gedney expects to be in the new quarters about March 1.

MALTBY-HENLEY COMPANY, 20 Warren street, New York, in their advertisement in this issue illustrate their genuine Giant Nail Puller and Box Opener, offered in three sizes, weighing 5, 4 and 3 pounds respectively.

THE ALLIANCE IRON FOUNDRY, Alliance, Ohio, have branched out and added the manufacture of Hand Riveters and other Hardware Novelties to their line. The first of the year W. F. Ruhl was installed as business manager and the works are now reported running overtime to fill their orders.

THE RUSSELL & ERWIN MFG. COMPANY maintain a very efficient branch in the Marquette Building, Chicago, under the management of Theodore D. Peck. They have a fine suite of offices, which enable them not only to conduct the details of the Western business secured through traveling salesmen reporting to this branch, but also to exhibit samples of Builders' Hardware. They have ingeniously economized space in carrying out this purpose without sacrificing effectiveness needed in handling so great a variety of goods as they manufacture. Mr. Peck's long experience has enabled him to devise numerous methods of storing and displaying samples which are of great advantage in conducting business in this manner. The Marquette Building is one of the most modern and beautifully finished office buildings in Chicago. The interior finish is exclusively in mahogany, and the surroundings are therefore of a character well adapted to bring out the beauties of modern artistic Builders' Hardware.

TWENTIETH CENTURY MFG. COMPANY, 17 Warren street, New York, whose advertisement appears on another page, are now commencing to make deliveries of their new models of Oil and Gas Headlights, and they advise us that the outlook is for a larger sale of their goods than ever before. A good demand is noted for the Lamps for use as driving lights for light carriages, runabouts, &c. The company are also making a superior Bracket for dashboards, &c.

JOHN S. LENG'S SON & Co., headquarters 4 Fletcher street, New York, where they have been located for over 25 years, have opened a branch at 7 Warren street for the convenience of the trade. They have also recently established a branch at 905 Arch street, Philadelphia.

The Wrightsville Hardware Company.

AT a meeting of the stockholders of the Wrightsville Hardware Company, Wrightsville, Pa., held January 17, Frank J. Magee, Cal. G. Smith, Henry McElroy, Henry Birnstock and John W. Filbey were elected a Board of Directors for the ensuing year. At a subsequent meeting of the board the directors elected Frank J. Magee, president; Cal. G. Smith, secretary, and Henry McElroy, treasurer. Mr. McElroy was appointed manager and John W. Filbey superintendent.

The company report that they have just closed one of the most successful years since their organization. The employees now number over 125, and the products of the establishment are shipped to all parts of the world, the export trade more than doubling during the year just past. The company have recently purchased a property adjoining their works, and now own the entire river and canal front for a block. Plans are being perfected for an enlargement of the plant, and no effort will be spared to meet the demands of their growing business.

Among the Hardware Trade.

W. E. Moore is successor to Timmons & Moore in the Hardware, Harness and Furniture business at Wilsonville, Neb.

The store of J. W. Starr & Co., Junction City, Ore., was recently damaged by fire.

Ramsay Hardware Company, Ellensburg, Wash., have recently taken possession of more commodious quarters.

F. E. Liese & Son, Belleville, Ill., have removed to well arranged new quarters. The buildings they now occupy were erected for the better handling of their growing trade in Hardware, Stoves and the like. Tin work is done in a detached, well lighted building.

Seventy-five dollars' worth of Revolvers, Razors and Knives was stolen from the store of W. H. Keating & Co., Ottumwa, Iowa, on the night of the 18th ult. An unsuccessful attempt was made to break open the safe.

Louis N. Schemmel expects soon to embark in the Hardware business at Escanaba, Mich.

William A. Olmsted is intending to open a new store at Bala, Pa. Mr. Olmsted will carry Hardware, Bicycles and Sporting Goods and will also conduct an electrical and bicycle repairing department.

Butt & Boyd, Adairsville, Ky., have sold out to G. H. Byers.

Miscellaneous Notes.

J. N. Reimers, Davenport, Iowa, manufacturer of Reimers' Superior pig forceps, has recently improved them and offers for this season a design which he claims possesses points of excellence not found in former makes. His forceps are made of refined malleable iron, finished in three coats of the best tin, and weigh $1\frac{1}{4}$ pounds. Mr. Reimers advises us that he does not sell to catalogue houses, but protects the trade by maintaining a profitable price on his goods.

Cast and Wrought Padlocks.

The W. H. Chapman Company, Middletown, Conn., for whom Allerton-Clarke Company, 97 Chambers street, New York, are selling agents, in addition to the manufacture of saddlery hardware, have begun the production of cast iron and wrought iron padlocks, and in a catalogue of 89 pages just issued show the various patterns. Supplementing the padlocks shown and described, about 20 additional numbers will be ready for the market about February 1, they expect.

Union Automatic Tire Inflator.

The United Specialty Company, 47 Great Jones street, New York, are manufacturing the Union automatic tire inflator and other specialties. The tire inflator is an upright inclosed piece of mechanism 4 or 5 feet high and is designed for road houses and similar places largely frequented by wheelmen. A little more than 2 feet from the bottom a pipe projects and turns upward and is so fitted with rubber that a wheelman can remove the cap to his tire valve, lift the wheel slightly so that the valve will connect with the tube referred to, when by dropping a penny in a slot a tire is automatically filled to a pressure of 45 pounds or less as the rider desires, the supply ceasing when the wheel is removed. A greater pressure for tandems, &c., can be had, if necessary, by repeating the operation.

Handle Bar Binder.

The National Cycle Mfg. Company, Bay City, Mich., are using in their handle bar for 1899 a development of their handle bar binder first used in 1896. On the fixed bars the one nut on the top of the tee controls the vertical adjustment; on the adjustable bars the bolt and nut passes through a hollow bolt, which controls the sweep of the adjustment. A peculiar good feature of the adjustable bar is that when the rider desires the drop position the bar is $1\frac{1}{2}$ inches forward of the center, and when in a raised position the same distance back of the center.

The Mallory-Wheeler Company.

The Mallory-Wheeler Company, New Haven, Conn., have added quite a number of padlocks to their already extensive line, and they now feel that they are not only the oldest, but the largest makers of this class of goods in the country. They state that they are in position to fill all orders promptly and at the lowest figures. They advise us that they are carrying in stock in New Haven from 15,000 to 18,000 dozen padlocks, made up, and in their Chicago warehouse, 15 West Lake street, a stock of from 2000 to 3000 dozen, and at their New York warehouse, 18 Murray street, a similar number, so that they are in position to give all orders immediate attention.

New '99 Solid Handle Steel Cork Screw.

Wm. R. Clough, Alton, N. H., proprietor of the Rockwell Clough Company, is offering the solid handle steel cork screw illustrated herewith. Under Mr. Clough's former patents wood handle wire cork screws were made on hand machines, and the handles were made in two pieces and glued together, being more expensive and less reliable than the one shown here, which has a solid handle and is made automatically. A bundle of wire is placed on a reel, the wire goes in at one end of the machine and the

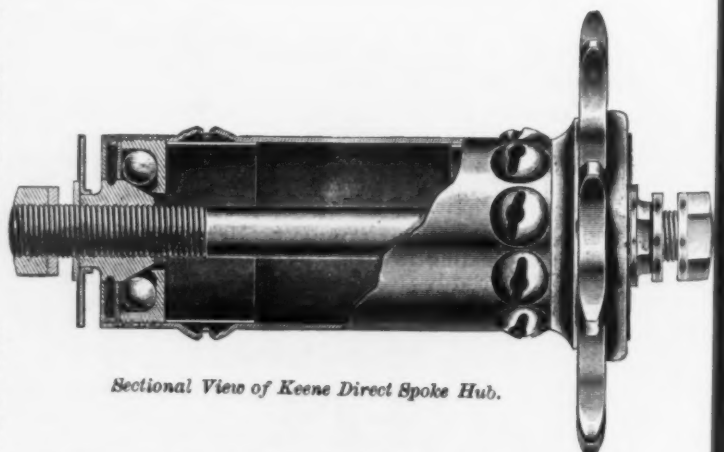


New '99 Solid Handle Steel Cork Screw.

handle at the other. Meeting they are formed into a cork screw ready for the market at one stroke. A patent has been applied for on the present design.

Keene Direct Spoke Hub.

Several models of the bicycles made by the Trinity Cycle Mfg. Company, Keene, N. H., will be equipped with the new Keene direct spoke hub, here illustrated. The manufacturers refer to the fact that bent spokes are often used because of the increased expense of making hub shells for direct spokes, but they say a glance at the accompanying cut will show that while the Keene hub shell is comparatively cheap to make, no detail of strength or beauty is neglected in its manufacture. The bearings are accurately ground to size and are interchangeable. Great care is taken in hardening, and the cups and cones are of sufficient weight to eliminate danger of breakage. Special attention is called to the adjusting disk wrench attached to the hexagonal end of the cone shown in the



Sectional View of Keene Direct Spoke Hub.

cut away portion of the engraving, by the use of which adjustment can be made by the fingers, the adjustment once made being locked firmly by screwing up the axle nut on the adjusting side. The dust groove in the cone in connection with the felt washer in a dust proof ball retainer is a patented device. The cone is cut away from the outer side of the dust cup, so that when wiping the wheel the tendency is to carry dust away from the bearings rather than force grit into them. It is said that for dust to reach the balls it is necessary for it to pass over the raised outer edge of the dust groove, which is constantly in contact with the felt washer, then through the greased groove itself and again pass the inner ridge of the groove and the felt protection, which is practically impossible.

D. D. Gillett & Co. have embarked in the Hardware business at Spencer, Ill.

Automatic Acetylene Gas Lamp.

The Plume & Atwood Mfg. Company, 29 Murray street, New York, have just put on the market the Automatic bicycle and carriage lamp to burn acetylene gas, as here shown. Fig. 1 illustrates the general appearance of the lamp and the interior is indicated by the sectional view in Fig. 2. A is a lava gas tip, B valve hole in body of lamp,



Fig. 1.—Automatic Bicycle and Carriage Lamp.

C tube entrance in equalizing chamber F, D opening in equalizing pipe, E rubber distributor surrounding equalizing pipe, F equalizing chamber in cap, G carbide in generating chamber, H water tank, I feeder cap, J tip cleaning tool in feeder cap and K valve to turn water full on or off. The lamp is 6 $\frac{3}{4}$ inches in height and is nicked on brass. Granulated carbide is placed in the inner receptacle and water introduced through the feeder cap I to the reservoir surrounding the body of the lamp, the supply of water being regulated by the valve K. The point is made by the manufacturers that the lamp is self controlled and self generating, and when being started the water valve should be turned full on, shutting the water entirely off when through with. There is no need of adjusting the water supply, as that is automatically controlled by the

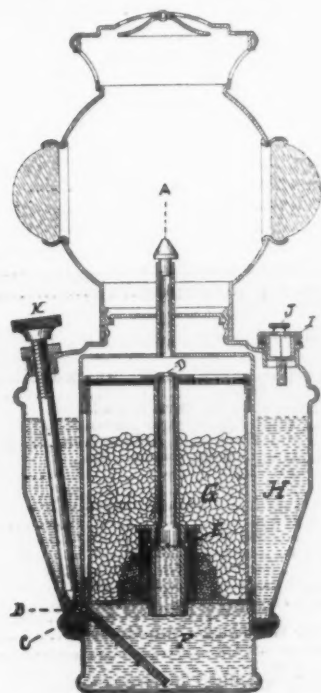


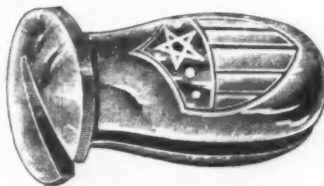
Fig. 2.—Sectional View of Lamp.

gas when in operation. No absorbents, wicks, blotting paper or pads are used and a uniform flame is obtained as long as the material lasts.

C. H. Mann has sold out his Hardware business in Clio, Mich., to J. R. Simmons, Fred Kent and L. W. Willett, who will continue under the style of the Clio Hardware Company.

Neverslip Nipple Grip.

Buffalo Specialty Mfg. Company, Buffalo, N. Y., are making the Neverslip nipple grip, as here shown three-quarters size. It is made of cast iron, nickel plated and is 2 $\frac{1}{4}$ inches long by 1 3-16 inches diameter at polished end. The jaws of the grip have a capacity of from 3-32 to 3-16 inch, and are said to be hardened to such an extent that they cannot be filed. The advantages of this tool to which the makers draw attention are that it fits any nipple and



Neverslip Nipple Grip.

is instantaneously adjusted, is simple, convenient and effective and fits the hand perfectly. They are packed one dozen in a counter display box.

Peerless Hand Riveter.

The Peerless Riveter Company, Cleveland, Ohio, are offering the hand riveter, shown herewith. The machine, which weighs 1 $\frac{1}{2}$ pounds, is constructed with a screw acting upon a compound lever. It is from the combination of a fulcrum with a screw, it is explained, that the riveter derives its great power. The points of excellence enumerated by the makers are as follows: That the riveter sets tubular rivets through hard leather, embedding both the head and clinched point; that if desired to strengthen the joint by covering it with light sheet metal, brass, tin or copper, the riveter will force the rivet through both the metal and leather, as shown in the cut, with the greatest ease; that the riveter does not mar the enamel on the rivet head, which is important, for when



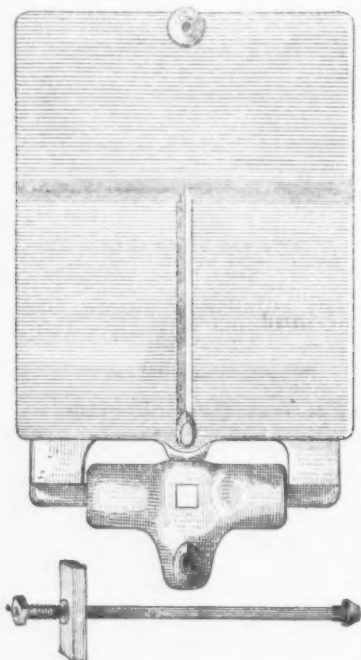
Peerless Hand Riveter.

the enamel is ground off the rivet head the work not only suffers in appearance, but the rivet rusts when exposed to the weather; that both the wheel and forcing screw are at the top of the machine and above the work to be riveted, adding to the convenience of the operator and to the usefulness of the machine; that the machine is always ready for use, is quickly and easily operated and is a mechanical machine constructed upon mechanical principles. A patent has been allowed and will soon be issued, we are informed.

Scanlan & McKenny have succeeded John Scanlan in the Agricultural Implement business at Bradley, S. D.

The Chicago Foot Warmer.

A device for enabling the heat of a steam or hot water radiator to be utilized in warming the feet has been brought out by the Chicago Foot Warmer Company, 19 Wabash avenue, Chicago, as herewith illustrated. It consists of a metal plate which may be readily attached to a radiator by means of a bolt shown in the cut. When thus fastened it can be operated as if on a hinge, being either



The Chicago Foot Warmer.

raised so as to be folded up tightly against the radiator or lowered to make a rest for the feet. It will be greatly appreciated, it is remarked, by those who desire some arrangement of the kind in connection with a radiator. It is finished in gold or silver bronze and is sold at a very reasonable price.

The Elgin Adjustable Wrench.

The new Elgin adjustable wrench, which is herewith illustrated, is adapted to general purposes, as will be observed by the shape of the jaws; it will turn a nut, hold



Elgin Adjustable Wrench.

a pipe or twist a rod. It is shaped like the old fashioned alligator wrench, having one jaw notched so that it will hold without slipping. It is made so that the notched jaw can be replaced if necessary. The illustration shows the jaw separated from the wrench. It is flat and neat, so that it can go into holes which other wrenches cannot

penetrate, can be conveniently carried in the pocket, is strong and well constructed. It is designed for general electric work, harness makers' and blacksmiths' use, bicycle repairing, plumbing, pump work and for agricultural use. It is manufactured by the Star Mfg. Company, Carpentersville, Ill.

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New Imperial Wheels.

Illustrations are herewith given of wheels of entirely new design which have been brought out for this season

frame and $1\frac{3}{8}$ inches in head, with the length of head $7\frac{1}{2}$ inches.

Drop forgings are used throughout in both these models, and in every other respect they have been finished to meet the demand for strictly high grade construction



Fig. 1.—New Imperial Bicycle No 100.

by the Ames & Frost Company, makers of Imperial wheels, Chicago. Fig. 1 is model 100, for men, and Fig. 2 is model 91, for ladies. Model 100 has 30 inch wheels and model 91 has 28-inch wheels. Model 100 is distinctive in appearance but without the exaggerated features which have been carried to extremes in some other machines. The wheel base is 46 inches, and the crank hanger is placed 4 inches below the wheel centers. The cranks are

and equipment. They make a number of other models, including juvenile wheels and tandems.

The Iwan Sickle Edge Hay Knife.

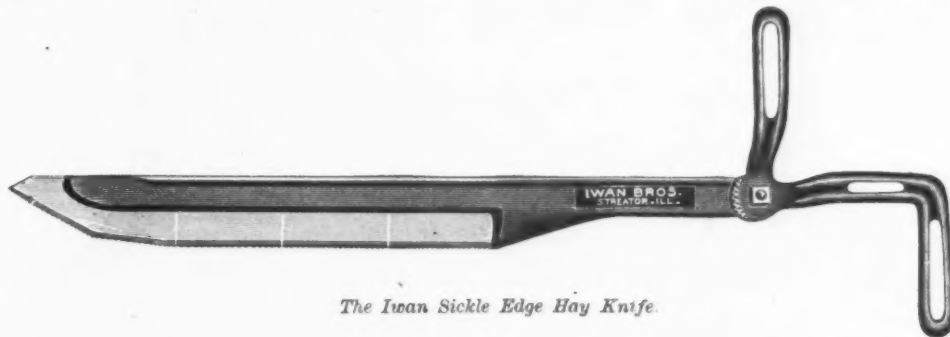
The Iwan Brothers, Streator, Ill., have brought out the hay knife which is herewith illustrated. The principal features of this knife are the adjustable handle and



Fig 2.—New Imperial Bicycle No. 91.

steel drop forgings, the right crank and shaft being in one continuous piece, and the left crank fastened to the crank shaft with taper fit and lock nut. The length of the head for a 23 inch frame is $35\frac{1}{2}$ inches and for a 25 inch frame $63\frac{1}{2}$ inches. The handle bars and the seat posts are fastened by internal binders. Shelby seamless tubing is

the sectional sickle. It will be observed that the side handle is capable of being arranged in any position by loosening the nut. The teeth around the eye of the handle engage in other teeth on the knife, so that when the nut is drawn tight the handle is securely locked. The sickle is made in sections and riveted to a strong bar. If a section



The Iwan Sickle Edge Hay Knife.

used, the main frame being $1\frac{1}{8}$ inches and the head $1\frac{3}{8}$ inches. Flush joints are used. The fork crown is a hollow forging, arch pattern. Handle bars are adjustable.

The ladies' wheel shown is made in three heights of frame, of Shelby seamless tubing, $1\frac{1}{8}$ inches in main

should be damaged by accident it can be replaced at a small cost. The manufacturers state that the edge always remains sharp and that the handles are so arranged as to clear the operator's hands from the stack and to get the most power, thus making it easy for the operator.

Cooper's All Wrought Concord Clips.

The accompanying cuts relate to all wrought Concord clips offered by H. W. Cooper, Moline, Ill. The section clip, Fig. 2, consists of a heavy all wrought clip, a malleable iron filler or plug, one malleable iron clevis and a

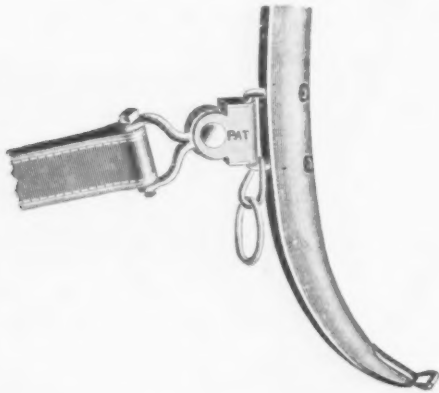


Fig. 1.—Cooper's All Wrought Jointed Concord Clip

$\frac{3}{8}$ -inch Norway iron bolt. When these parts are put together, Fig. 1, the result is an all wrought clip connected by a $\frac{3}{8}$ -inch Norway iron rivet to a Concord clevis, making a jointed Concord hame section clip, the joint of which adjusts the draft to the traces when in use to a direct angle, and when the harness is hung up the traces hang down in the same manner as from a staple and clip. The section clip is referred to as being especially adapted to long staple Concord hames with 2, $2\frac{1}{4}$, $2\frac{3}{4}$ or 3 inch width of staple. The point is made that they are placed on bolt hames without taking out the bolt, a saving of



Fig. 2.—Parts of Jointed Concord Clip.

time. Clevises can be used $1\frac{1}{2}$, $1\frac{3}{4}$, 2, $2\frac{1}{4}$, $2\frac{1}{2}$ or $2\frac{3}{4}$ wide, according to the width of trace made. The fact is emphasized that the section clip is adjustable to the size of hame bolt or staple, and to width of traces. In Fig. 3 are shown straight Concord clips, the hame and trace finished, also with the clevis ready for the trace, the plain clip before the ears being bent around the bolt or staple. The saving of leather and time is referred to as a feature of this arrangement. The clips are made from the best of steel. The ears are made so that a perfect circle will be

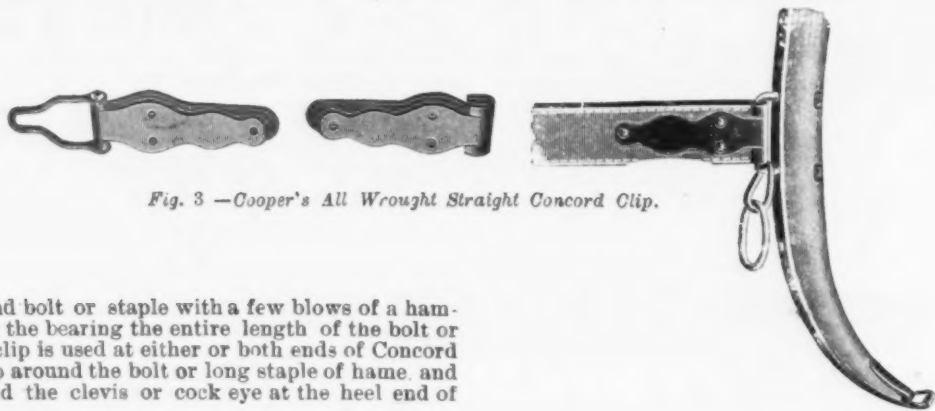


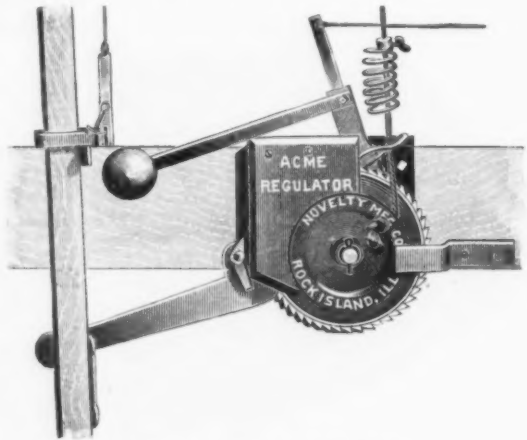
Fig. 3.—Cooper's All Wrought Straight Concord Clip.

formed around bolt or staple with a few blows of a hammer, insuring the bearing the entire length of the bolt or staple. The clip is used at either or both ends of Concord traces—to clip around the bolt or long staple of hame, and to clip around the clevis or cock eye at the heel end of trace.

The Acme Wind Mill Regulator.

The Novelty Mfg. Company, Rock Island, Ill., have recently brought out the Acme wind mill regulator, herewith illustrated, which is designed to keep a tank full of water without further care or attention after its attachment to the wind mill. A float, which is connected by

wires with the regulator, rests on the top of the water in the tank. When the tank is filled the upward movement of the float releases the dog on a lever which, by connecting mechanism, pulls the mill out of gear and stops the pump. When the water in the tank falls 5 inches the wheel is thrown in gear again and the pump starts to

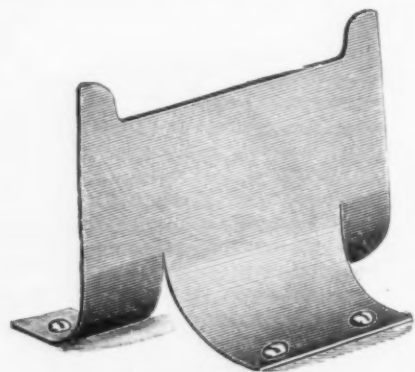


The Acme Wind Mill Regulator.

work. The regulator thus prevents overflowing and the consequent annoyance of a mud hole around the tank, while on the other hand the tank is always kept full of water. Much wear is saved on both wind mill and pump.

The Perfect Steel Foot Scraper.

The William E Pratt Mfg. Company, 91 Lake street, Chicago, are manufacturing an ingeniously designed foot



Perfect Steel Foot Scraper.

scraper, which is herewith illustrated. The scraper is formed from one piece of Bessemer steel and enameled black. Its size is 6 inches long and $3\frac{1}{4}$ inches high. The

steel is of No. 16 gauge, which is quite heavy, and the edge is dressed smoothly, so that mud or ice can be removed without cutting the shoe. The scraper will not bend, and being made of steel it will not break from a sharp blow, as is often the case with cast iron articles. The scrapers are compactly packed one dozen in a box complete with round head blued screws.

Current Hardware Prices.

JANUARY 25, 1899.

NOTE.—The quotations given below represent Current Hardware Prices, whether made by manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail Hardware merchants. Very small orders and broken packages often command higher prices, while lower prices are often given to larger buyers.

The character @ is used to indicate a range of price; thus discount 50 & 10 @ 50 & 10 & 5%, signifies that the goods in question are sold at prices ranging from 50 & 10% to 50 & 10 & 5%.

Many of the lists referred to in the following quotations are given in *The Iron Age* Standard Hardware Lists (price 50 cents). On many other articles, however, the different manufacturers have their own lists, which they will send to the trade on application. In the advertising columns will be found the announcements of manufacturers of nearly all kinds of Hardware, who will be pleased to furnish the trade information in regard to their goods and prices.

Adjusters Blind—

Domestic, # doz. \$3.00...39¢@39¢10¢
North's...# doz. \$4.00...10¢@10¢10¢
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent...# doz. \$1.00...40¢
Taplin's Perfection...# doz. \$1.00...40¢

Ammunition—See Caps, Cartridges, Shells, &c.

Anti-Rattlers—

Burton's No. 1...# doz. pr. \$1.00...40¢
Burton's No. 2...# doz. pr. \$0.75...40¢
Fernald's Wire...# doz. pr. \$0.75...40¢

Anvils—American—

Eagle Anvil, # D...7¢@7¢4¢
Hay-Budden, Wrought...# doz. \$1.00...40¢
Horseshoe brand, Wrought...# doz. \$1.00...40¢
Samson, # D...# doz. \$1.00...40¢
Trenton, Wrought...# doz. \$1.00...40¢

Imported—

Armstrong's Mouse Hole...# doz. \$1.00...40¢
Solid Swedish Steel...# doz. \$1.00...40¢
Peter Wright's...# doz. \$1.00...40¢

Anvils, Vise and Drill—

Millers Falls Co., \$18.00...30¢

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Common Double Spur...# doz. \$1.00...40¢
Boring Machine Augers...# doz. \$1.00...40¢
Car Bits, 12-in. twist...# doz. \$1.00...40¢
Jennings' Pattern Car Bits...# doz. \$1.00...40¢
Jennings' Pattern Auger Bits...# doz. \$1.00...40¢

Adams Art Auger Bit...# doz. \$1.00...40¢
Cincinnati Bell Hangers' Bits...# doz. \$1.00...40¢
Foster's Pat. Auger Bits...# doz. \$1.00...40¢
C. E. Jennings & Co., No. 10 ext. lip. R. Jennings' list...# doz. \$1.00...40¢

No. 30, R. Jennings' list...# doz. \$1.00...40¢
Russell Jennings'...# doz. \$1.00...40¢
L'Hommedieu Car Bits...# doz. \$1.00...40¢
Snell's...# doz. \$1.00...40¢
Wright's Jennings Bits (R. Jennings' list)...# doz. \$1.00...40¢

Bit Stock Drills—

Standard list...# doz. \$1.00...40¢
Cincinnati...# doz. \$1.00...40¢
Syracuse, for wood...# doz. \$1.00...40¢
W. & B. Wood Boring Brace Drills...# doz. \$1.00...40¢

Expansive Bits—

Clark's small, \$18; large, \$26...# doz. \$1.00...40¢
Lavigne's Clark's Pattern, No. 1...# doz. \$1.00...40¢
Steer's No. 1, \$26; No. 2, \$18...# doz. \$1.00...40¢
Swan's...# doz. \$1.00...40¢

Gimlet Bits—

Common Double Cut...# gr. \$3.75@3.25
German Pattern...# gr. \$5.00
Double Cut, makers' lists...# gr. \$5.00@5.10
See also Gimlets.

Hollow Augers—

Bonney's Adjustable, # doz...\$16.00
Cincinnati Adjustable...# doz. \$16.00
Cincinnati Standard...# doz. \$16.00
Douglas...# doz. \$16.00
Stearns', Common, No. 3...# doz. \$16.00
Stearns', all other numbers...# doz. \$16.00

Ship Augers and Bits—

L'Hommedieu's...# doz. \$15.10@15.10@10¢
Snell's...# doz. \$15.10@15.10@10¢
Snell's Ship Auger Pat'n Car Bits...# doz. \$15.10@15.10@10¢
Watrous'...# doz. \$15.10@15.10@10¢

Awl Hafts, See Hafts, Awl.

Awls—

Brad awls:
Handled...# gr. \$3.00@3.45
Unhandl'd, Shouldered...# gr. \$3.00@3.45
Unhandl'd, Patent...# gr. \$3.00@3.45

Peg awls:
Unhandl'd, Patent...# gr. \$3.00@3.45
Unhandl'd, Shouldered...# gr. \$3.00@3.45
Scratch awls:
Handled, Common...# gr. \$1.25@1.35
Handled, Socket...# gr. \$1.10@1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands...\$5.00@5.25
First quality, other brands...\$4.25@4.75
Jobbers' Special Brands, good quality...\$1.00@1.75
Cheap Handled Axes...\$4.75@5.25
Beveled, add 25¢ # doz.

Axle Grease—See Grease, Axle

Axles—

Concord, loose collar...4¢
Concord, solid collar...5¢
No. 1 Common...5¢
No. 1 1/2 Common...5¢
No. 2 Solid Collar...4¢
Nos. 7, 8, 11 to 14...6¢@10¢
Nos. 15 to 18...5¢
Nos. 19 to 22...7¢

Balances—

Caldwell low list...30¢

Spring—

Spring Balances...50¢@10¢60¢
No. 2000...20 80
Chatillon, # doz...\$0.60 70 1.50
Chatillon Straight Balances...50¢
Chatillon Circular Balances...60¢

Barb Wire—See Wire, Barb

Bars—Crow—

Steel Crowbars, 10 to 40 lb...# doz. \$2.00@2.50

Beams, Scale—

Scale Beams, List Jan. 14, '99...50¢@10¢
Chatillon's No. 1...50¢@10¢
Chatillon's No. 2...50¢@10¢@50¢@10¢

Beaters—Egg—

New Dover (Dover Stamping Co.)...# doz. \$7.50
Dover, Ex. Family size...# doz. \$7.50
New Dover...# doz. \$7.50
Dover (Standard Co.), No. 10...# doz. \$7.50
Dover (Taplin Pat. Imp.), No. 100...# doz. \$7.50
Lebanon...# doz. \$7.50
Spiral...# doz. \$7.50
Wonder (S. S. & Co.)...# doz. \$7.50

Bellows—

Backsmith—

Standard List...70¢@1¢70¢@10¢5¢
Often sold at net prices:
Inch...30 32 34 36 38 40
Each...\$3.75 4.00 4.75 5.25 6.00 7.00
Extra Length:
Each...\$4.50 5.00 5.50 6.25 7.00 8.50

Molders—

Inch...9 10 11 12 14 16
Per doz...\$8.00 6.50 7.75 8.75 11.00 13.25

Hand—

Inch...6 7 8 9 10 12
Per doz...\$3.25 3.50 3.75 4.50 5.25 6.00

Bells—Cow—

Wrought, Sheep and Cow...60¢@10¢70¢
Kentucky...75¢@10¢
Western...70¢
Jersey...75¢@10¢
Texas Star...50¢@10¢

Door—

Gong, Yankee...60¢@10¢
Lever, R. & E. Mfg. Co.'s...60¢@10¢
Lever and Pull, Sargent's...45¢@10¢45¢@10¢

Hand—

Hand Bells, Polished...70¢@10¢70¢@10¢5¢
White Metal...70¢@10¢
Nickel Plated...60¢@10¢
Swiss...70¢
Silver Chime...40¢@10¢50¢

Miscellaneous—

Farm Bells...# doz. \$2.00
Steel Alloy Church and School...50¢@10¢

Belting

Rubber—

Common Standard...75¢@10¢75¢@10¢5¢
Extra...70¢@10¢70¢@10¢5¢
Standard...70¢@10¢70¢@10¢5¢

Leather—

Best Oak Tanned...60¢@10¢60¢@10¢10¢

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Brettell Tire Upsetter, \$15...50¢
Green River Tire Benders and Upsetters...20¢
Soddard's Lightning Tire Upsetters...40¢@50¢

Bicycle Goods—

Lane's Cycle Hanger...39¢@5¢

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—
See Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Common Jap'd Sheaves...75¢@75¢5¢
Eddy's All Steel, Common Bushed...70¢
Eddy's All Steel, Bronze Bushed...60¢5¢
Hartz All Steel, Common Bushed...50¢10¢
Hartz All Steel, Bronze Bushed...50¢10¢
Ford's Star Brand, Self Lubricating...70¢
Hollow Steel, Ford's Pat. Star Brand...50¢10¢
Lane's Pat. Adj. Perfect Safety and Junior...30¢
Stowell's Novelty, Mal. Iron...50¢@10¢
See also Machines, Hoisting.

Boards, Stove—

Market somewhat irregular.
Manufacturers quote...90¢@10¢40¢
Jobbers often sell...40¢@10¢50¢

Bolts—

Carriage, Machine, &c.—

Common, list Jan. 30, '95...75¢@7¢@80¢
Norway Iron, \$3.00, list Oct. 7, '84...75¢@10¢75¢@10¢5¢
Phila. Eagle, \$3.00 list...85¢15¢
Bolt Ends, list Jan. 30, '95...80¢@80¢10¢
Machine list June 12, '96...80¢@80¢10¢

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:
Inch...3 4 5 6 8
Per doz...\$0.27 30 38 48 66
Cast Iron Bottom, Japanned:
Inch...6 8 10
Per doz...\$0.83 1.05 1.65
Cast Iron Chain, Flat, Japanned:
Inch...3 4 5 6 8
Per doz...\$1.10 1.32 1.87
Cast Iron Shutter, Brass Knobs:
Inch...6 8 10
Per doz...\$0.49 .77 .88
Wrought Barrel Brass Knob:
Inch...3 4 5 6 8
Per doz...\$0.44 50 61 70 1.28

Ives' Patent Door, 60¢@10¢50¢@10¢10¢

Wrought Flush—
B. K. Sargent's list...50¢@10¢60¢
B. K. Stanley's list...60¢@10¢60¢@10¢5¢
Bunk, Sargent's or Stanley's list...50¢@10¢50¢@10¢5¢

Wrought Shutter, Standard list

60¢@10¢7¢@70¢

Wrought Square, Standard list

75¢@75¢10¢

Stove and Plow—

Plow...70¢@10¢10¢
Stove, list August 27, 1898...80¢

Tire—

Common, list Feb. 28, '93...80¢
American Screw Company:
Norway Phila., list Oct. 16, '84...80¢
Eagle Phila., list Oct. 16, '84...85¢
Bay State, list Feb. 28, '93...80¢
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80¢
Eagle Phila., list Oct. 16, '84...85¢
Eclipse, list Feb. 28, '93...80¢
Port Chester Bolt & Nut Company:
Empire, list Feb. 28, '93...80¢
Keystone Phila., list Oct. 16, '84...85¢
Norway Phila., list Oct. 16, '84...80¢

Borers, Tap—

Borer, Tap, King, with Handle:
Inch...1 1/2 2 2 1/2 3 3 1/2 4 4 1/2 5 5 1/2 6 6 1/2 7 7 1/2 8 8 1/2 9 9 1/2 10 10 1/2 11 11 1/2 12 12 1/2 14 14 1/2 16 16 1/2 18 18 1/2 20 20 1/2 22 22 1/2 24 24 1/2 26 26 1/2 28 28 1/2 30 30 1/2 32 32 1/2 34 34 1/2 36 36 1/2 38 38 1/2 40 40 1/2 42 42 1/2 44 44 1/2 46 46 1/2 48 48 1/2 50 50 1/2 52 52 1/2 54 54 1/2 56 56 1/2 58 58 1/2 60 60 1/2 62 62 1/2 64 64 1/2 66 66 1/2 68 68 1/2 70 70 1/2 72 72 1/2 74 74 1/2 76 76 1/2 78 78 1/2 80 80 1/2 82 82 1/2 84 84 1/2 86 86 1/2 88 88 1/2 90 90 1/2 92 92 1/2 94 94 1/2 96 96 1/2 98 98 1/2 100 100 1/2 102 102 1/2 104 104 1/2 106 106 1/2 108 108 1/2 110 110 1/2 112 112 1/2 114 114 1/2 116 116 1/2 118 118 1/2 120 120 1/2 122 122 1/2 124 124 1/2 126 126 1/2 128 128 1/2 130 130 1/2 132 132 1/2 134 134 1/2 136 136 1/2 138 138 1/2 140 140 1/2 142 142 1/2 144 144 1/2 146 146 1/2 148 148 1/2 150 150 1/2 152 152 1/2 154 154 1/2 156 156 1/2 158 158 1/2 160 160 1/2 162 162 1/2 164 164 1/2 166 166 1/2 168 168 1/2 170 170 1/2 172 172 1/2 174 174 1/2 176 176 1/2 178 178 1/2 180 180 1/2 182 182 1/2 184 184 1/2 186 186 1/2 188 188 1/2 190 190 1/2 192 192 1/2 194 194 1/2 196 196 1/2 198 198 1/2 200 200 1/2 202 202 1/2 204 204 1/2 206 206 1/2 208 208 1/2 210 210 1/2 212 212 1/2 214 214 1/2 216 216 1/2 218 218 1/2 220 220 1/2 222 222 1/2 224 224 1/2 226 226 1/2 228 228 1/2 230 230 1/2 232 232 1/2 234 234 1/2 236 236 1/2 238 238 1/2 240 240 1/2 242 242 1/2 244 244 1/2 246 246 1/2 248 248 1/2 250 250 1/2 252 252 1/2 254 254 1/2 256 256 1/2 258 258 1/2 260 260 1/2 262 262 1/2 264 264 1/2 266 266 1/2 268 268 1/2 270 270 1/2 272 272 1/2 274 274 1/2 276 276 1/2 278 278 1/2 280 280 1/2 282 282 1/2 284 284 1/2 286 286 1/2 288 288 1/2 290 290 1/2 292 292 1/2 294 294 1/2 296 296 1/2 298 298 1/2 300 300 1/2 302 302 1/2 304 304 1/2 306 306 1/2 308 308 1/2 310 310 1/2 312 312 1/2 314 314 1/2 316 316 1/2 318 318 1/2 320 320 1/2 322 322 1/2 324 324 1/2 326 326 1/2 328 328 1/2 330 330 1/2 332 332 1/2 334 334 1/2 336 336 1/2 338 338 1/2 340 340 1/2 342 342 1/2 344 344 1/2 346 346 1/2 348 348 1/2 350 350 1/2 352 352 1/2 354 354 1/2 356 356 1/2 358 358 1/2 360 360 1/2 362 362 1/2 364 364 1/2 366 366 1/2 368 368 1/2 370 370 1/2 372 372 1/2 374 374 1/2 376 376 1/2 378 378 1/2 380 380 1/2 382 382 1/2 384 384 1/2 386 386 1/2 388 388 1/2 390 390 1/2 392 392 1/2 394 394 1/2 396 396 1/2 398 398 1/2 400 400 1/2 402 402 1/2 404 404 1/2 406 406 1/2 408 408 1/2 410 410 1/2 412 412 1/2 414 414 1/2 416 416 1/2 418 418 1/2 420 420 1/2 422 422 1/2 424 424 1/2 426 426 1/2 428 428 1/2 430 430 1/2 432 432 1/2 434 434 1/2 436 436 1/2 438 438 1/2 440 440 1/2 442 442 1/2 444 444 1/2 446 446 1/2 448 448 1/2 450 450 1/2 452 452 1/2 454 454 1/2 456 456 1/2 458 458 1/2 460 460 1/2 462 462 1/2 464 464 1/2 466 466 1/2 468 468 1/2 470 470 1/2 472 472 1/2 474 474 1/2 476 476 1/2 478 478 1/2 480 480 1/2 482 482 1/2 484 484 1/2 486 486 1/2 488 488 1/2 490 490 1/2 492 492 1/2 494 494 1/2 496 496 1/2 498 498 1/2 500 500 1/2 502 502 1/2 504 504 1/2 506 506 1/2 508 508 1/2 510 510 1/2 512 512 1/2 514 514 1/2 516 516 1/2 518 518 1/2 520 520 1/2 522 522 1/2 524 524 1/2 526 526 1/2 528 528 1/2 530 530 1/2 532 532 1/2 534 534 1/2 536 536 1/2 538 538 1/2 540 540 1/2 542 542 1/2 544 544 1/2 546 546 1/2 548 548 1/2 550 550 1/2 552 552 1/2 554 554 1/2 556 556 1/2 558 558 1/2 560 560 1/2 562 562 1/2 564 564 1/2 566 566 1/2 568 568 1/2 570 570 1/2 572 572 1/2 574 574 1/2 576 576 1/2 578 578 1/2 580 580 1/2 582 582 1/2 584 584 1/2 586 586 1/2 588 588 1/2 590 590 1/2 592 592 1/2 594 594 1/2 596 596 1/2 598 598 1/2 600 600 1/2 602 602 1/2 604 604 1/2 606 606 1/2 608 608 1/2 610 610 1/2 612 612 1/2 614 614 1/2 616 616 1/2 618 618 1/2 620 620 1/2 622 622 1/2 624 624 1/2 626 626 1/2 628 628 1/2 630 630 1/2 632 632 1/2 634 634 1/2 636 636 1/2 638 638 1/2 640 640 1/2 642 642 1/2 644 644 1/2 646 646 1/2 648 648 1/2 650 650 1/2 652 652 1/2 654 654 1/2 656 656 1/2 658 658 1/2 660 660 1/2 662 662 1/2 664 664 1/2 666 666 1/2 668 668 1/2 670 670 1/2 672 672 1/2 674 674 1/2 676 676 1/2 678 678 1/2 680 680 1/2 682 682 1/2 684 684 1/2 686 686 1/2 688 688 1/2 690 690 1/2 692 692 1/2 694 694 1/2 696 696 1/2 698 698 1/2 700 700 1/2 702 702 1/2 704 704 1/2 706 706 1/2 708 708 1/2 710 710 1/2 712 712 1/2 714 714 1/2 716 716 1/2 718 718 1/2 720 720

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Plate.....	33¢
Reading.....	60¢@60¢10¢
R. & E. Mfg. Co.....	60¢10¢@70¢
Sargent & Co.....	60¢10¢@80¢10¢10¢
S. B. & Co., Locks, Knobs, &c.....	40¢40¢55¢

Elevator—

Stowell's.....	83¢
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Padlocks—

Wrought Iron, Hat Dec. 3, '97.....	75¢10¢@80¢
Dog Collar, S. B. Co.....	40¢
K. T. Frail:	
Cast Iron, Scandinavian.....	90¢40¢
Mal. Iron, 120 line.....	90¢40¢
Mal. Iron, 110 and 125 line.....	50¢55¢
All others.....	50¢55¢
Scandinavian.....	90¢40¢@90¢40¢10¢
S. B. & Co.....	40¢

Sash, &c.—

Fitch's Patent.....	70¢10¢
Ives' Patent.....	60¢55¢
Payson's Perfect.....	70¢
Payson's Signal.....	70¢10¢
Reading.....	60¢10¢10¢@70¢

Machines—**Boring—**

Without Augers. Upright. Angular.

Boss, Carpenters'.....	\$3.50
Boss, Ship Bldrs'.....	75¢
Douglas.....	2.50
Penning's.....	2.50
Miller's Falls.....	5.75
Small's, Rice's Pat.	2.75

Fluting—

Crown Jewel, 6 in.....	\$2.50@2.75
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Holisting—

Moore's Anti-Friction Differential Pulley Block.....	80¢
Moore's Hand Hoist, with Lock Brake.....	20¢
Maris & Beckley (Teal Patent).....	80¢
See also Blocks.	

Washing—

Wayne American, No. 2.....	27.50
Western Star, No. 3.....	27.50
Western Star, No. 4.....	30.00
St. Louis, No. 41.....	68.00

Mallets—

Hickory.....	50¢50¢10¢
Limnawite.....	50¢50¢10¢
Tinners', Hickory and Applewood.....	50¢50¢
Fiber Head, Stearns'.....	25¢

Mattocks—

Standard List.....	75¢10¢
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Measures—

Peck and Half Peck, See Ware, Standard and Fiber.	
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Meat Cutters—

See Cutters, Meat.

Menders—

Centaur Harness Menders.....	20¢
Jones' Hose Menders.....	40¢
Victor Complete Hose Menders.....	25¢

Milk Cans—See Cans, Milk.**Mills—Coffee—**

Box and Side, List Jan. 1, '88.....	60¢10¢@60¢10¢10¢
Net prices are often made on some goods which are lower than above discounts.	
Enterprise Mfg. Co., list Jan. 17, '93.....	30¢
National, list Jan. 1, '94.....	30¢
Parker's Columbia and Victor.....	60¢10¢
Parker's Upright.....	30¢10¢@30¢
Swift, Lane Bros.....	33¢

Mincing Knives—

See Knives, Mincing.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Net prices are very frequently quoted	
Cheap.....	1.05 1.70 1.75 1.80
Medium.....	2.50 2.75 3.00 3.25
High Grade.....	3.50 3.75 4.00 4.25
Pennsylvania and Continental.....	60¢10¢10¢

Philadelphia:

All Styles except A and E.....	70¢10¢
Style A, all Steel.....	60¢10¢
Style E, Low Wheel.....	60¢10¢
Style E, High Wheel.....	70¢10¢

Muzzles—

Safety.....	12.00¢@12.50
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Nails—

Cut and Wire. See Trade Report. Wire Nails and Brads, Papered. List May 1, '92. Hungarian, Finishing, Upholsterers, &c. See Trade Report.

Horse—

Nos. 6 7 8 9 10	
A. C.....	25¢ 23¢ 22¢ 21¢ 21¢
American.....	9¢ 9¢ 9¢ 9¢ 9¢
Ausable.....	25¢ 23¢ 22¢ 21¢ 21¢
Capewell.....	19¢ 18¢ 17¢ 16¢ 16¢
C. B. K.....	25¢ 23¢ 22¢ 21¢ 21¢
Champion.....	25¢ 23¢ 22¢ 21¢ 21¢
Clinton Fin.....	19¢ 17¢ 16¢ 15¢ 14¢
Maud S.....	25¢ 23¢ 22¢ 21¢ 21¢
Putnam.....	23¢ 21¢ 20¢ 19¢ 18¢
Vulcan.....	23¢ 21¢ 20¢ 19¢ 18¢

Picture—

Brass Head, Combination list.....	50¢10¢
Brass Head, Sargent's list.....	70¢10¢@70¢10¢55¢
Porcelain Head, Combination list.....	40¢10¢
Porcelain Head, Sargent's list.....	50¢10¢
Crown.....	50¢10¢
Niles' Patent.....	40¢

Nippers, See Pliers and Nippers.**Nut Crackers—**

See Crackers, Nut.

Nuts—List Dec. 18, 1898.

Cold Punched.....	Off list.
Hexagon, plain.....	6.00
Square, plain.....	6.00
Square, C. T. & R.....	6.00
Hexagon, C. T. & R.....	7.20
Hot Pressed.....	
Square, Mfrs. Standard.....	6.20
Square, U. S. Standard.....	6.30
Hexagon, Mfrs. Standard.....	7.10
Hexagon, U. S. Standard.....	7.30

Oakum—

Best or Government.....	5¢
Navy.....	5¢
U. S. Navy.....	5¢
Plumbers' Spun Navy.....	5¢
F. O. B. New York. In carload lots.....	2¢ off.

Oil Tanks—See Tanks, Oil.**Oilers—**

Brass and Copper.....	50¢10¢@60¢
Zinc and Tin.....	75¢75¢10¢
Malleable, Hammers' Improved, No. 1.....	\$3.60; No. 2, \$4; No. 3, \$4.40
Malleable, Hammers' Old Pattern, same list.....	50¢10¢
Wilmot & Hobbs Mfg. Co.....	70¢10¢@75¢

Openers, Can—

French.....	35¢
Iron Handle.....	60¢75¢
Klo. d.ike, Rogers & Bros.....	60¢
National.....	1.75¢@2.00
Sardine Scissors.....	2.00¢@2.10
Sprague, Iron or Wood Handles.....	40¢45¢
Stowell's.....	75¢10¢

Streeter's:

Sensible, Japanned.....	35¢
Sensible, Nickel.....	55¢
Surprise.....	55¢
New Sprague, Metallic Handle.....	35¢
New Sprague, Wood Handle.....	45¢

Packing—**Rubber—**

Standard, fair quality.....	70¢10¢@75¢
Superior quality.....	75¢10¢@80¢
Extra.....	80¢55¢@80¢10¢
Jenkins' Standard.....	80¢

Miscellaneous—

American Packing.....	9¢@10¢
Cotton Packing.....	13¢@14¢
Italian Packing.....	10¢@11¢
Jute.....	5¢@5½¢
Russia Packing.....	12¢@13¢

Pails—**Creamery—**

S. S. & Co., with gauges.....	No. 1 \$5.25; No. 2, \$5.50
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Galvanized—

Inch.....	
Water, Standard.....	16.50 18.50 20.50
Water, Competi- tion.....	14.00 16.00 18.00
Pipe.....	19.00 22.50 25.50
Well.....	21.00 22.00 23.00

Pans—**Dripping—**

Large Sizes.....	3¢@3½¢
Small sizes.....	2¢@2½¢

Fry—

Standard List.....	80¢80¢10¢
No.....	0 1 2 3 4
doz.....	\$3.00 \$3.75 \$4.25 \$4.75 \$5.25
No.....	5 6 7 8
doz.....	\$6.00 \$7.00 \$8.00 \$9.00
Acme Fry Pans.....	75¢75¢10¢

Roasting and Baking—

Columbian, S. S. & Co., Nos. 5, 6 doz.....	\$10; 10, \$11.50; 20, \$13; 30, \$15
Simplex No. 08, 6 doz.....	\$7.00; No. 09, \$8.50

Paper—**Building Paper—**

Per roll	
Rosin Sized Sheathing.....	500 sq. ft.
Light wt., 20 sq. ft. to lb.....	\$0.35@0.40
Medium wt., 12 sq. ft. to lb.....	\$0.55@0.60
Heavy wt., extra quality.....	\$0.95@1.05
Barrett's Water Proof Sheathing.....	\$1.35@1.75
Medium Grades Water Proof Sheath- ing.....	\$0.80 to 1.25
Deafening felt, 9, 6 and 4½ sq. ft. to lb.....	\$42.50

Tarred Paper.

1 ply (roll 300 sq. ft.), ½ ton.....	\$35@37
2 ply, heavy, ½ roll 100 sq. ft.....	90¢
2 ply, light, ½ roll 100 sq. ft.....	75¢
3 ply, heavy, ½ roll 100 sq. ft.....	\$1.20
3 ply, light, ½ roll 100 sq. ft.....	\$1.00

Sand and Emery—

List April 19, 1898.....	50¢10¢55¢@60¢
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Parers—**Apple—**

Advance.....	45¢
Baldwin.....	45¢
Bonanza.....	45¢
Dandy.....	45¢
Eureka, 1888.....	16.00
Family Bay State.....	12.00
Improved Bay State.....	27.00@30.00
New Lightning.....	55¢
Penn.....	47.5¢
Perfection.....	44.00
Reading 72.....	44.00
Reading 75.....	47.00
Turn Table.....	44.50
White Mountain.....	44.00

Potato—

Saratoga.....	45¢
White Mountain.....	44.50

Paris Green—

Arsenic, Regs. r. c. s. k. s.....	10¢
Kegs o 100 to 175 pounds.....	10¢
Kits of 14, 25 and 50 pounds.....	11¢
Paper boxes 2 to 5 pounds.....	11¢
Paper b x e 1 pound.....	12¢
Paper boxes ¼ pound.....	13¢
Paper b x e ¼ pound.....	14¢

Above prices subject to a rebate of 1 cent for 10,000 pounds or over and ½ cent rebate for 5000 to 10,000 pounds purchased during the season.

Picks and Mattocks—

Railroad or Adze Eye, 5 to 6.....	\$12.00; 6 to 7, \$13.00
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Pinking Irons—

See Irons, Pinking.

Pins—**Bow—**

1½-inch.....	45¢@55¢
2-inch.....	50¢@55¢

Escutcheon—

Brass.....	70¢70¢10¢
Iron, list Nov. 11, '95.....	60¢60¢35¢

Pipe, Cast Iron Soil—

Standard.....	75¢10¢@75¢10¢55¢
Extra Heavy.....	80¢80¢35¢
Fittings.....	80¢55¢@80¢10¢

Pipe, Wrought—

Factory Shipments.	
List Jan. 29, '95.....	
1½ and under Galv.....	45¢
1½ and over, Plain.....	65¢
1½ and over, Galv.....	50¢
1½ and over, Galv.....	50¢

Cold Drawn Seamless Steel Tubing.....	60¢
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Molding.....	45¢@45¢55¢
Bench, First quality.....	50¢55¢@50¢10¢
Bench, Second quality.....	50¢10¢@50¢10¢
Bailey's (Stanley R. & L. Co.).....	50¢10¢@50¢10¢10¢10¢

Chaplin's Iron Planes.....	50¢10¢
Miscellaneous Planes (Stanley R. & L. Co.).....	25¢10¢@25¢10¢10¢10¢
Sargent's.....	80¢10¢@80¢10¢70¢

Standard List.....	30¢10¢@30¢10¢10¢
Auburn Thistle.....	30¢10¢@30¢10¢10¢
Buck Bros.....	30¢
Butcher's.....	55¢00¢@55¢25¢
Stanley R. & L. Co.....	50¢10¢@50¢10¢10¢
L. & J. White.....	20¢25¢@25¢

Self-Sealing Planes (S. S. & Co.).....	50¢
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Doz.....	\$2.00
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Felloe.....	6¢@6½¢
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Self-Sealing Planes (S. S. & Co.).....	50¢
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Acme Nippers.....	50¢
Button's.....	70¢10¢@70¢10¢55¢
Cronk's Patent Pliers.....	60¢
Cronk's Stub's Pat. Pliers.....	50¢10¢

Cronk's Button Pattern.....70¢**Cronk's Com. Cutting and Gas Pliers.....70¢****Gas Pliers, ½ doz.....**

7-in. 8-in. 9-in. 10-in.	
Best.....	\$5.25 \$6.00 \$6.50
Good.....	\$2.50 2.75 3.00 3.50

Heiler's Farriers' Pincers and Tools.....**Morrill's Parallel, ½ doz.....\$12.00****P. S. & W. Cast Steel.....50¢50¢55¢****P. S. & W. Tinners' Cutting Nippers, add 5¢.....10¢****Utica Drop Forge & Tool Co.: 40¢55¢****Combination Pliers.....40¢55¢****Side Cutting Pliers.....40¢55¢****Hall Patent Nipper.....40¢55¢****Round and Flat Nose Pliers.....40¢55¢****End Cutting Pliers.....40¢55¢****Royal Blue.....40¢55¢****Glass Pliers.....40¢55¢****Burner Pliers.....40¢55¢****Plumbs and Levels—****Plumbs and Levels.....75¢10¢10¢@80¢10¢****Cook's.....40¢10¢@40¢10¢10¢55¢****Pocket Levels.....75¢10¢10¢@75¢10¢****Stanley R. & L. Co.....70¢10¢10¢@70¢10¢10¢10¢**

Pelican, 1/2 doz. \$9.00.....15&10
Scranton, No. 1 and 2, 1/2 doz.\$10.00
Scranton, No. 3, 1/2 doz.\$9.50

Pulleys—

Hay Fork, Swivel or Solid Eye.....
Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, 1/2 doz. \$12.00.....40
Hay Fork, Stowell's No. 15 & 25 1/2 doz. \$1.75
Hay Fork, Stowell's No. 35 & 45 1/2 doz. \$2.00
Hay Fork, Stowell's Nos. 56 & 66.....\$2.25
Hot House, Awning, &c.....60&60
Japanned Clothes Line.....60&60
Japanned Screw.....70&10
Japanned Slide.....70&10
Stowell's Collingor End, Anti-Friction 40
Stowell's Dumb Walter, Anti-Friction 40
Stowell's Electric Light.....33
Stowell's Slide, Anti-Friction.....50
Sash (Auger Mortise):
Common Sense, 1 1/2 in., 1/2 doz., 18¢;
2 in., 20¢.
Empire.....1 1/2 in., 17¢; 2 in., 19¢
Ideal No. 13.....1 1/2 in., 15¢; 2 in., 17¢
Improved.....1 1/2 in., 17¢; 2 in., 19¢
Niagara.....1 1/2 in., 16¢; 2 in., 17¢
No. 20, Troy.....1 1/2 in., 16¢; 2 in., 17¢
Star.....1 1/2 in., 16¢; 2 in., 17¢
Acme.....1 1/2 in., 18¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—

Clatern, Best Makers.....70&75
Pitcher Spout, Best Makers.....75&10
Pitcher Spout, Cheaper Goods.....80&50
Flint & Wallings Fast Mail.....65
Myer's Pumps, low list.....52
Pump Leathers, all sizes.....\$ gr. 80.00
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....20

Punches—

Bemis & Call Co.'s Cast Steel Drive. 50&55
Bemis & Call Co.'s Check.....55
Bemis & Call Co.'s Spring.....50&55
Bemis & Call Co.'s Springfield Socket.....65
Niagara Hollow Punches.....45
Niagara Solid Punches.....55
Sawdusters or Drive, good.....1/2 doz. 60&65
Spring, good quality.....1/2 doz. \$1.70
Spring, Leach's Pat.....15
Steel Screw, H. & K. Mfg. Co.....50
Timbers' Hollow, F. S. & W. Co. 20&25
Timbers' Solid, F. S. & W. Co. 20
\$1.44.....55

Rail—

Barn Door, &c.—
Barn Door, Light.....1 in. 1 1/2 1 3/4 2 00
B. D., for N. E. Hangers:
Small. Med. Large.
100 feet.....\$1.00 2.00 2.50
Cronk's Double Braced Steel Rail, 1/2 foot.....36
Lanes' C. N. T., 100 ft.....34
Lanes' Standard, 100 ft.....34
McKinney's None Better.....ft. 34
McKinney's Standard.....ft. 34
Moore's Wrt. Bracket, Steel.....\$2.40
Sliding Door, Bronzed Wrt. Iron, ft. 6 1/2
Sliding Door, Iron Painted.....ft. 26
Sliding Door, Wrt. Brass, 100 ft. 36
Stowell's Steel Rail.....35&10
Terry's Steel Rail.....ft. 34

Rakes—

Cast Steel, Asso. List.....77&82
Malleable.....70&10
Buffalo Lawn and Garden.....\$3.50
Fort Madison Red Head Lawn.....\$3.00
Fort Madison Blue Head Lawn.....\$2.65

Rasps, Horse—

New Nicholson Horse Rasp.....70&10
See also Files.

Razor Straps—

See Straps, Razor.

Reels—**Clothes Line—**

Stearns'.....35&10

Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Popolo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25
Hendryx Single Action Series, 102P and PN, 202P and PN, 102P and PN, 202P and PN, 304P and PN, 00804P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor 50
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2004N, 2004P and PN, 00204PN, 0024 and 0024N, 5009N and PN.....40&10

Registers—

List Dec. 20, '97:
Japanned.....40&10
Nickel Plate.....40&10
Bronze Plate.....40
Imitation Bronze.....40

Rings and Ringers—**Bull Rings—**

Peck, Stow & W. Co.'s.....60&60
Sargent's.....80&80

Hog Rings and Ringers—

Blair's Rings.....\$ gr. 3.40
Blair's Ringers.....\$ gr. 5.50
Brown's Rings.....\$ gr. 3.40
Brown's Ringers.....\$ gr. 5.50
Hill's Rings.....\$ gr. boxes, \$2.60
Hill's Ringers.....\$ gr. boxes, \$2.60
Perfect Rings.....\$ gr. 7.00
Perfect Ringers.....\$ gr. 7.00

Rivets and Burrs—

Copper.....50&10
Norway Quality or Soft Steel.....50
Tinners'.....50
Miscellaneous.....50
Rivet Sets—See Sets.

Roasting and Baking

Pans—See Pans, Roasting and Baking.

Rods—

Stair, Black Walnut.....1/2 doz. 40
Stair, Brass, Oval or Hollow.....50&50

Rollers—

Acme Stowell's Anti-Friction.....50&10
Barn Door, Sargent's list. 60&10
Lane's Stay.....33&5
Stowell's Barn Door Stay.....\$ doz. \$1.00

Rope—

The following prices are f.o.b. New York or factory; terms, 1 1/2% for cash.
Manilla, 7-16 inch and larger.....\$ 7 1/2
Manilla, 1/4 and 5-16 inch.....\$ 8 1/2
Manilla, Tarred Rope 15 thread.....\$ 7 1/2
Manilla Hay Rope Medium.....\$ 7 1/2
Sisal.....\$ 7 1/2
Sisal, 1/4 and 5-16 in.....\$ 8 1/2
Sisal Hay Rope, 2 to 10 ply.....\$ 7 1/2
Sisal Medium Lath Yarn.....\$ 6 1/2
Cotton Rope:
Best, 1/4 in. and larger.....\$ 13 1/2
Medium, 1/4 in. and larger.....\$ 10 1/2
Common, 1/4 in. and larger.....\$ 8 1/2
Jute Rope.....\$ 5 1/2

Wire Rope—

List Sept. 1, '94. All kinds. 30&24¢ cash

Rules—

Boxwood.....80&10
Ivory.....40&10
Lufkin's Steel.....50&10
Lufkin's Lumber.....50&10
Stanley R. & L. Co.:
Boxwood.....80&10
Ivory.....40&10

Sad Irons—See Irons, Sad. Sand and Emery Paper and Cloth—

See Paper and Cloth.

Sash Cords—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.**Saws—**

NOTE.—Extra 5&10% often given.
Atkins' Circular.....50
Atkins' Band.....50
Atkins' Cross Cuts.....40
Atkins' Mulay, Mill and Drag.....50
Atkins' One-Man Saw.....40
Atkins' Wood Saws.....40
Atkins' Hand, Compass, &c.....40
Disston's Circular.....45
Disston's Cross Cut, list Jan. 1, '98, 40&10
Disston's Hand.....25
P. E. Jennings & Co.'s.....25
Peace Circular and Mill.....15
Peace Cross Cuts, list Jan. 1, '98, 15&10
Peace Hand, Panel and Rip.....25
Richardson's Circular and Mill.....45
Richardson's X Cuts, list Jan. 1, '98, 45&10
Richardson's Hand, &c.....45
Simonds' Circular Saws.....45
Simonds' Crescent Ground Cross Cut Saws.....35
Simonds' One-Man Cross Cuts.....40
Simonds' Gang Mill, Mulay and Drag Saws.....45
Wheeler, Madden & Clemons Mfg. Co.:
Cross Cuts, list Jan. 1, '98, 45&10
Hand, Panel and Rip.....40
Woodrough & McFarlin:
Cross Cuts, list Jan. 1, '98, 45&10
Hand, Panel and Rip.....35

Hack Saws—

Griffin's complete.....50
Griffin's Hack Saw Blades.....60
Star Hack Saws and Blades.....15&10

Scroll—

Barnes' No. 7, \$15.....25
Barnes' Velocipede Scroll Saw, \$15.....20
Barnes' Scroll Saw Blades.....40
Lester, complete, \$10.00.....15
Rogers, complete \$4.00.....15

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Scale Beams—**

See Beams, Scale.

Scales—

Chatillon's Eureka.....85
Chatillon's Favorite.....40
Chatillon's Grocers' Trip Scales.....50
Family, Turnbull's.....80
Hatch, Counter, No. 171, good quality.....\$ doz. \$17.00
Hatch, Tea, No. 161.....\$ doz. \$5.75
Pelouse Scales—Family, Candy, Grocers and Postal.....39
Union Platform, Plain.....\$3.00
Union Platform, Striped.....\$3.15
"The Standard" Portable.....\$3.00
"The Standard" R. R. and Wagon.....60

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.).....\$5.00
Box, 1 Handle.....\$ doz. \$2.00
Box, 2 Handle.....\$ doz. \$3.00
Foot.....55
Ship, No. 1, 1/2 doz., \$3.50; No. 2, \$2.25
Ship, R. L. Tool Co.....10
Tatum's Box.....35
Screen Window and Door Frames—See Frames

Screw Drivers—

See Drivers, Screw.

Screws—**Bench and Hand—**

Bench, Iron.....1/2 doz., 1 in., \$2.50;
1 1/2, \$2.75; 1 3/4, \$3.25
Bench, Wood, Beech.....1/2 doz. \$2.00
Hand, Wood.....30&10
Hand, Grand Rapids.....35
Coach, Lag and Hand Rail—
Lag, Common Point, list Jan. 30, '95.....85
Coach and Lag, Gimlet Point, list Jan. 30, '95.....80
Hand Rail, list Jan. 1, 1881.....82

Jack Screws—

Millers Falls.....50&10
Millers Falls, Roller.....50
P. S. & W.....40
Sargent.....70
Stearns.....40
Tatum's.....25

Machine—

List Jan. 1, '98.
Flat Head, Iron or Brass.....60
Round Head, Iron or Brass.....60

Set and Cap—

Set (Iron or Steel).....70
Sq. Hd. Cap.....65
Hex. Hd. Cap.....60

Wood—**Manufacturers' Circular Prices**

List Nov. 10, 1898.
Flat Head, Iron.....87
Round Head, Iron.....85
Flat Head, Brass.....85
Round Head, Brass.....82
Flat Head, Bronze.....82
Round Head, Bronze.....80
Rogers' Drive Screws.....87
NOTE.—An extra 5 or 10% is often given.

Scroll Saws—See Saws, Scroll.**Scythes—**

Grass and Grain.....50&10

Scythe Snaths—

See Snaths, Scythe.

Sets—**Awl and Tool—**

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls, 1/2 doz.....\$2.00
Wood Hdle., 14 Awls, 6 Tools, 1/2 doz.....\$2.25

Atkins' Sets, Awls and Tools:

No. 20, 1/2 doz. \$10.00, 60&10
Fray's Adj. Tool Hdls., No. 1, \$12;
No. 2, \$12; 4, \$12; 5, \$7.....50
Millers Falls Adj. Tool Hdls., No. 1
No. 2, \$12; No. 4, \$12; No. 5, \$12.....15
Stanley's Excelsior:
No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50.....40

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.....\$ doz. \$9.00

Nail—

Round, assorted.....\$ gr. \$3.00
Octagon.....\$ gr. \$4.00
Buck Brothers.....27
Cannon's Diamond Point, \$ gr. \$12.25
Snell's Knurled, Cup Pt.....50
Snell's Corrugated, Cup Pt.....60

Rivet—

Regular list.....70

Saw—

Atkins' Genuine.....\$ doz. \$4.50
Atkins' Imitation.....\$ doz. \$3.00
Atkins' Criterion.....\$ doz. \$6.00
Atkins' Adjustable.....\$ doz. \$6.00
Bemis & Call Co.'s Cross Cut.....30
Bemis & Call Co.'s Plate.....20
Bemis & Call Spring Hammer.....80
Disston's Star.....95
Hammer, Bemis & Call Co.'s new Pat. 45
Hammer, Seymour, Smith & Son, \$ doz. \$4.75
Morrill's No. 1, \$15.00.....40
Nos. 3 and 4, Cross Cut, \$23.00, 40&20
No. 5, Mill, \$31.00.....40
No. 10, \$15.50.....40
No. 11, \$16.00.....40
Stillman.....40
Taintor Positive, \$ doz. \$18.....60

Sharpeners, Knife—

Tanite Mills \$ gross, \$14.40.....25

Shaves, Spoke—

Iron.....\$ doz. \$0.95
Wood.....\$ doz. \$2.25
Bailey's (Stanley R. & L. Co.).....50
Cincinnati.....25
Goodell's, \$ doz. \$9.00.....15
Stearns.....40
Tatum's.....25

Shears—

Cast Iron, good quality, \$ gross, 7-in., \$14; 8-in., \$16; 9-in., \$18.
Cast Iron, cheaper grade, \$ gross, 7-in., \$8.50; 8-in., \$9; 9-in., \$11.50.
Acme Cast Shears.....40
Straight Trimmers, &c.....70
Second quality.....50
Davensport Cutlery Co.....60
Helm's Tailors Shears.....40
Seymour's, list Dec. '81.....60
Seymour's Nickel.....50
Seymour's Tailors Shears.....40
Wilkinson's Hedge.....15
Wilkinson's Sheep.....15

Tinners' Snips—

Forged Handles, Steel Blades.....20
Malleable Handles, Laid with Steel.....40
Forged Handles, Steel Blades, Berlin.....40
Niagara Snips.....40
Seymour's.....60

Pruning Shears and Tools—

Disston's Combined Pruning Hook and Saw, \$ doz. \$18.00.....25
Disston's Pruning Hook, \$ doz. \$12.00.....25
Eagle Pruning Shears.....60
John T. Henry Mfg. Company:
Henry's Genuine, Nos. 1, 2 and 22.....50

Henry's Pattern, No. 20.....50

Henry's Pattern, No. 21.....50
Conn. Pattern, Nos. 32, 33 and 35.....50
Conn. Pattern, No. 4.....50
Henry's Orange Shears.....50
Henry's Grape Shears.....50
Henry's Tree Pruners.....75
Levin Pruner, No. 23, \$9.00 \$ doz. 45
Levin Pruner, No. 24, \$12.00 \$ doz. 45
No. 100 Pruning Shear.....60
P. S. & W. Co. Combination.....60
Seymour's.....80

Seymour Smith & Son:

Rockdale.....20
New Standard Tree Pruner.....80
Others.....85
Telegraph Tree Pruner.....70
Waters Tree Pruner.....80
Wheeler, M. & C. Co. Combination, \$ doz. \$12.00.....25

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50
Patent Roller.....60
Patent Roller Hatfield's, Sargent's list.....80
Reading.....70
R. & F.....40
Wrightsville, Hatfield Pattern.....80

Sliding Shutter—

Reading list.....70
R. & F.....60
Sargent's list.....60

Shells—

Brass Shot Shells, Club, Rival, Climax.....60
Brass Shot Shells, first quality.....80
First quality 4, 8, 10 and 12 gauge.....25
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge (\$7.50 list).....20
Quick Shot Reinforced New Victor 40&50
Smokeless brand, 12, 10, 16 gauge.....33
Star, Club, Rival and Climax Brands.....33
Trap brand 12 and 10 gauge.....33

Shells, Loaded—

Loaded with Black Powder.....40
Loaded with Nitro Powder.....40

Ship Tools—

L. & L. J. White.....25

Shoes, Horse, Mule, &c.—**Horse—**

Burden's, Perkins', Phoenix, Old Dominion, Bryden's Boss Crescent, &c. from jobbers.....\$3.10
Bryden's Frog Pressure.....\$4.00
Gibbs' Rubber Cushioned, \$ set, \$1.50

Mule—

Add 50 cents \$ keg to above prices.

Shot—

Drop, up to B 25-m bag.....\$1.25
Drop, up to B 5-m bag.....80
Drop, B and larger, 25-m bag.....\$1.50
Drop, B and larger, 5-m bag.....80
Buck 25-m bag.....\$1.50
Buck, 5-m bag.....80
Chilled, 25-m bag.....\$1.50
Dust Shot, 5-m bag.....80
These prices are often shaded 50 to 75 25-m bag, especially in the West.

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D. S. L Handle:
A1, Price \$ doz. \$8.
A2, Price \$ doz. \$8.
A3, Price \$ doz. \$8.
A4, Price \$ doz. \$8.
A5, Price \$ doz. \$8.
A6, Price \$ doz. \$8.
A7, Price \$ doz. \$8.
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A94, Price \$ doz. \$8.
A95, Price \$ doz. \$8.
A96, Price \$ doz. \$8.
A97, Price \$ doz. \$8.
A98, Price \$ doz. \$8.
A99, Price \$ doz. \$8.
A100, Price \$ doz. \$8.

Shovels and Tongs—

Brass Head.....60
Iron Head.....60

Sieves and Sifters—

Buffalo Metallic, S. S. & Co., \$ gr.:

16 16/18 18 18/20
Blued.....\$10.80
Tinned.....11.40
Eclipse.....12.00
Hunter's Genuine.....\$ gr. \$5.00
Hunter's Imitation.....\$ gr. \$5.50
Shaker (Barber's Pat.) Flour Sifters.....\$ doz. \$2.00

Sieves, Wooden Rim—

Mesh 18, Nested, \$ doz. \$0.70
Mesh 20, Nested, \$ doz. \$0.80
Mesh 24, Nested, \$ doz. \$1.05

Sinks—**Cast Iron—**

According to list.....70

Wrought Steel—

Columbus Galv'd and Enameled.....50
Columbus, Painted.....30
L. & G.....30

Slates—(From store).
 "D" Slates.....50¢10¢10¢10¢
 Jacked No. 1.....50¢10¢10¢10¢
 Victor slates.....60¢ and eight 10¢ and 5¢

Slaw Cutters—See Cutters.
Snaps Harness—

Covert Mfg. Co.:
 Derby, Cen. Stamp Co.'s list 75¢10¢90¢
 High Grade.....45¢25¢
 Jockey.....45¢25¢
 Trojan.....45¢25¢
 Covert's Saddlery Works:
 Banner.....75¢
 Triumph.....70¢
 W. & E. T. Fitch:
 Bristol.....40¢10¢
 Empire.....50¢55¢
 National.....50¢55¢
 Clipper.....50¢10¢55¢
 Champion.....40¢10¢
 Victor.....60¢55¢
 German.....50¢50¢55¢
 Sargent's Patent Guarded.....70¢10¢70¢10¢10¢

Snaths—
 Scythe.....55¢

Snips, Tinner's—See Shears

Soldering Irons—
 See Irons, Soldering.

Spoke Trimmers—
 See Trimmers, Spoke.

Spoons and Forks—
 Tinned Iron—

Basting, Cen. Stamp Co.'s list 75¢10¢90¢
 Solid Table and Tea, Cen. Stamp Co.'s
 list.....70¢25¢

Silver Plated—
 Flat Ware.....60¢50¢60¢10¢55¢
 Rogers & Brother.....60¢
 O. Rogers & Bros.....60¢
 Wm. Rogers Mfg. Co.....60¢

Miscellaneous—
 German Silver.....60¢10¢
 C. Rogers & Bros.:
 18 percent German Silver.....60¢
 18 percent Nickel Silver.....60¢
 Silver Metal.....60¢10¢
 Wm. Rogers Mfg. Co.:
 18 percent German Silver.....60¢
 Rogers' Silver Metal.....60¢10¢

Springs—
 Door—
 Champion (Coll.).....50¢10¢50¢10¢10¢
 Gem (Coll.).....25¢
 Stubber, complete.....gro. \$15.00
 Star (Coll.).....35¢10¢
 Torrey's Rod, 39 in.....doz. \$1.10¢1.25
 Warner's No. 1, 3 doz. \$1.50; No. 2,
 \$3.40.....55¢55¢10¢
 Victor (Coll.).....60¢10¢60¢10¢55¢

Carriage, Wagon, &c.
 Alliptic, Concord, Platform and Half
 Buggy, 60¢10¢60¢10¢10¢10¢ or fol-
 lowing net prices:
 Tempered Oil Tempered
 Blk. Bk. Blk. Bk.
 2 1/2 in.....5¢6¢5¢6¢
 3 in.....5¢6¢5¢6¢
 3 1/2 in.....5¢6¢5¢6¢
 4 in.....5¢6¢5¢6¢
 Cliff's Bolt Springs.....40¢25¢
 Cliff's Seat Springs.....pair 45¢

Sprinklers, Lawn—
 Philadelphia No. 1, 3 doz. \$12; No. 2,
 \$15; No. 3, \$24.....35¢

Squares—
 Nickel plated.....List May 1 '95.
 Steel and Iron.....75¢10¢90¢25¢
 Rosewood Hdl. Try Square and T-Bevels
 60¢10¢10¢70¢
 Iron Hdl. Try Squares and T-Bevels
 40¢10¢40¢10¢10¢
 Dismont's Try Sq. and T-Bevels.....60¢10¢
 Winterbottom's Try and Miter.....50¢10¢

Squeezers—
 Lemon—
 Wood, Common, 3 gr. No. 0, \$5.00;
 No. 1, \$6.50; No. 2, \$10.00.
 Wood, Porcelain Lined, No. 1, 3 doz.
 \$3.25¢3.50
 Tinned Iron.....doz. \$0.80¢1.25
 Iron, Porcelain Lined, 3 doz. \$3.25¢3.50
 Hotchkiss Straight Flash.....doz. \$9.90
 Jennings' Star.....doz. \$1.55¢1.90
 King.....doz. \$2.00

Staples—
 Barbed Blind, 1/2, 3/4 and 1/2 in. 35¢6¢
 Fence Staples, Galvanized, as B'rd Wire
 Fence Staples, Plain.....See Trl. Rep.
 Grand Crossing Tack Co.'s list.....75¢10¢

Steels, Butchers'—
 Dick's.....40¢
 Foster Bro's.....40¢
 C. & A. Hoffmann's.....40¢
 Nichols Bros.....50¢
 John Wilson's, list Sep. 1, '94.....25¢

Steelyards—.....40¢40¢10¢

Stocks and Dies—

Blacksmith's:
 Butterfield's Goods.....35¢40¢
 Waterloo 1 Goods.....35¢40¢
 Gardner.....40¢10¢
 Green River.....25¢
 Lightning Screw Plate.....25¢
 Little Giant.....25¢
 Reese's New Screw Plates.....25¢30¢
 Reversible Ratchet.....25¢

Stone—
 Scythe Stones—
 Like Mfg. Co., list '95-'96.....33¢1/2
 Cleveland Stone Co., list Nov., '92.....33¢1/2

Oil Stones, &c.
 Like Mfg. Co.:
 Hindostan No. 1, 3 doz. 8¢
 Sand Stone.....33¢1/2
 Turkey Oil Stone, Extra,
 5 to 3 in.....80¢
 Turkey Slips.....\$2.00
 Lily White Washita.....60¢
 Rosy Red Washita.....60¢
 Washita Stone, Extra.....60¢
 Washita Stone, No. 1.....30¢
 Lily White Slips.....60¢
 Rosy Red Slips.....60¢
 Washita Slips, Extra.....60¢
 Washita Slips, No. 1.....70¢
 Arkansas Stone, No. 1, 3 doz. 8¢
 Arkansas Stone, No. 1, 5 doz. 10¢

Tanite Mills:
 Emery Oil, 3 doz. \$5.00.....50¢60¢

Stops, Bench—
 Cincinnati.....25¢10¢
 Seymour Smith & Son, No. 1,
 \$3.50; No. 2, \$3.20
 Millers Falls.....15¢10¢
 Morrill's, 3 doz., No. 1, \$10.00; No. 2,
 \$11.00, 40¢20¢
 Stearns'.....30¢55¢
 Tatum's.....40¢

Stops, Window—
 Taplin's.....45¢

Stove Boards—
 See Boards, Stove.

Stove Polish—See Polish, Stove.

Straps, Box—

Cary's Universal.....20¢10¢10¢

Stretchers, Carpet—
 Cast Iron, Steel Points.....3 doz. 70¢75¢
 Cast Steel, Polished.....doz. \$2.25
 Socket.....doz. \$1.75
 Bullard's.....35¢10¢40¢

Stuffers, Sausage—
 Miles' Challenge, 3 doz. \$20.....50¢50¢55¢
 Enterprise Mfg. Co., list Jan. 17, '93, 25¢
 National Specialty Mfg. Co., list Jan.
 1, '97.....25¢

Sweepers, Carpet—
 Bissell:
 Cosmopolitan, Cyco Bearing.....\$24.00
 Criterion.....\$16.00
 Furniture Protector, Japanned.....\$32.00
 Furniture Protector, Nickel.....\$24.00
 Gold Medal, Cyco Bearing.....\$24.00
 Grand, Cyco Bearing.....\$36.00
 Grand Rapids, Japanned.....\$22.00
 Grand Rapids, Nickel.....\$24.00
 Hall, Cyco Bearing.....\$40.00
 Improved Crown Jewel, Jap'd.....\$19.00
 Improved Crown Jewel, Nickel.....\$21.00
 Improved Victor.....\$18.00
 Popular.....\$14.00
 Premier, Cyco Bearing.....\$24.00
 Prize, Cyco Bearing.....\$24.00
 Standard, Japanned.....\$20.00
 Standard, Nickel.....\$22.00
 Superior, Cyco Bearing.....\$24.00
 Welcome, Cyco Bearing.....\$24.00
 Toy Line: Misses', 39; Little Jewel,
 \$6; Little Queen, \$1.50; Child's, \$2.50;
 Baby, \$2; Daisy, \$1.50.
 Goshen:
 Acme, Nickel.....\$24.00
 Banner.....\$20.00
 Champion.....\$17.00
 Common Sense, Nickel.....\$24.00
 Easy, Jap'd, 3 doz. \$20, Nickel.....\$22.00
 Gilt Edge, Nickel.....\$24.00
 Grand Republic (18 inch) Nickel.....\$24.00
 Imperial, Nickel.....\$25.00
 Ladies' Friend No. 1.....\$15.00
 Ladies' Friend No. 2.....\$16.00
 Little Pet.....\$6.00
 Majestic, Nickel.....\$24.00
 Model, Nickel.....\$24.00
 Our Best, Nickel.....\$24.00
 Our Leader.....\$18.00
 Our Own, Nickel.....\$24.00
 Rapid, Nickel.....\$22.00
 Reliable.....\$20.00
 Select, Nickel.....\$22.00
 Star.....\$19.00
 Toy.....\$1.50
 Triumph.....\$19.00
 Sweepette:
 No. 2, Oak, Jap'd.....\$18.00
 No. 4, Special, Oak and Birch,
 Silvered.....\$20.00
 No. 4, Regular, Oak and Birch,
 Nickel.....\$22.00
 No. 6, Oak and Mahogany, Nick.....\$24.00
 Diamond Medal.....\$27.00
 Comfort.....\$24.00
 Companion.....\$15.00
 Sunbeam, Toy.....\$15.00
 Dolly, Toy.....\$19.00

Tacks, Brads, &c.—
 List Jan. 15, '99.
 Carpet Tacks—
 American Blue.....90¢40¢
 American Tinned.....90¢40¢10¢
 American Cut Tacks.....90¢33¢40¢
 Swedes Iron Tacks.....90¢40¢
 Upholsterers' Tacks.....90¢50¢
 Glmp Tacks.....90¢50¢
 Lace Tacks.....85¢15¢
 Trimmers' Tacks.....90¢40¢
 Looking Glass Tacks.....75¢
 Bill Posters' and Railroad Tacks.....90¢33¢
 Hungarian Nails.....85¢55¢
 Common and Patent Brads.....75¢10¢
 Trunk and Clout Nails:
 Blue.....85¢10¢
 Tinned.....85¢10¢

Miscellaneous—
 Double Point Tacks, 90 & 5 or 6 tens.
 Steel Wire Brads, R. & E. Mfg. Co.'s
 list.....50¢10¢60¢
 See also Nails, Wire.

Tanks, Oil—
 Emerald, S. S. & Co.....30-gal. \$3.00
 Emerald, S. S. & Co.....60-gal. \$3.75
 Queen City S. S. & Co. 30-gal. each \$4.00;
 100-gal. \$5.25; 120-gal. \$5.50; 300-
 gal. \$14.00; 250-gal. \$17.75
 Wilson's:
 No. 9.....60¢10¢
 Aztec, Force Pump.....60¢10¢
 Cone Top, Measuring Pump.....60¢
 Cabinet, Measuring Pump.....50¢
 Gasoline Tanks.....60¢10¢

Tapes, Measuring—
 American.....50¢10¢40¢
 Chesterman's.....25¢25¢55¢
 Keuffel & Esser Co., Steel and Metallic,
 new list, 1898.....55¢
 Lufkin's Steel and Metallic.....35¢30¢10¢

Thermometers—
 Tin Case.....80¢10¢

Ties, Bale—Steel.
 Standard Wire, list.....50¢10¢35¢

Ties, Wall—
 Cleveland, Steel.....\$1000, \$10.00

Tinner's Shears, &c.—
 See Shears, Tinner's, &c.

Tinware—
 Stamped, Japanned and Pieced, sold
 very generally at net prices.

Tire Benders, Upsetters,
 &c.—See Benders and Upset-
 ters, Tire

Tobacco Cutters—
 See Cutters, Tobacco.

Tools—
 Coopers'—

Shaves, Cincinnati Tool Co.....20¢
 L. & I. J. White.....20¢20¢55¢

Saw—
 Atkins' new list.....40¢
 Simonds'.....83¢

Transom Lifters—
 See Lifters, Transom.

Traps—Game—
 Newhouse.....50¢50¢10¢
 Onelda Pattern.....80¢80¢55¢
 Sensible.....33¢1/233¢1/210¢

Mouse and Rat—
 Dandy.....3 doz. \$1.75
 Marty French Rat and Mouse Traps
 (Genuine):
 No. 1, Rat.....doz. \$15.00
 No. 3, Rat.....doz. \$5.85
 No. 3 1/2, Rat.....doz. \$4.50
 No. 4, Mouse.....doz. \$4.30
 No. 5, Mouse.....doz. \$3.00
 Hotchkiss Metallic Mouse, 5-hole traps,
 3 doz. 6 in; in full cases, 3 doz.....60¢
 Hotchkiss Imp. Rat Killer.....gr. \$12.50
 Hotchkiss New Rat Killer.....gr. \$12.50
 Mouse, Wood, Choker, 3 doz. holes, 3 doz.
 Mouse, Round Wire, 3 doz. \$1.50.....10¢
 Mouse, Sensible.....33¢1/2
 Rat, Decoy, 3 gr. \$10.00.....33¢1/2
 Schuyler's Rat Killer, No. 1, 3 gr. \$15.00;
 No. 2, 3 gr. \$15.00

Fly—
 Balloon, Globe or Acme.....doz. \$1.35; 3 gr. \$18.50
 Harper, Champion or Paragon
 3 doz. \$1.75; 3 gr. \$16.50

Triers—
 Butter and Cheese.....25¢

Trimmers, Spoke—
 Bonney's No. 1, 3 doz. \$2.75; No. 2,
 \$3.75
 Cincinnati.....25¢10¢
 Douglas', 3 doz. \$9.00.....20¢
 Stearns'.....20¢10¢

Trowels—
 Garden.....70¢
 Dismont's Brk and Plastering 25¢25¢10¢
 Peace's Plastering.....25¢25¢55¢
 Rose Brick and Plastering.....3¢40¢10¢
 Woodrough & McParlin, Pl. string, 25¢10¢

Trucks, Warehouse, &c.—
 B. & L. Block Co.'s list.....40¢
 Daisy Stove Trucks, Improved pattern
 3 doz. \$18.00

Tubs, Wash—
 No. 1 2 3
 Galvanized, 3 doz. \$4.00 4 50 5.00
 Galvanized S. S. & Co., with Wringer
 Attachment, 3 doz., No. 10, \$6.25;
 No. 20, \$6.75; No. 30.....\$7.50

Twine—
 Binder—
 White S'sal, 500 feet to b.....84¢
 Standard, 500 feet to b.....84¢
 Manila, 600 feet to b.....94¢
 Pure Manila, 650 feet to b.....94¢

Miscellaneous—
 No. 9, 1/4 and 1/2 in Balls.....20¢ 24¢
 No. 12, 1/4 and 1/2 in Balls.....17¢ 20¢
 No. 15, 1/4 and 1/2 in Balls.....14¢ 17¢
 No. 24, 1/4 and 1/2 in Balls.....14¢ 17¢
 No. 36, 1/4 and 1/2 in Balls.....18¢ 16¢
 Chalk Line, Cotton, 1/4 in Balls.....18¢20¢
 Cotton Mops, 6, 9, 12 and 15 in to doz.
 \$4.00

Cotton Wrapping, 5 Balls to b.....9¢16¢
 American 3-Ply Hemp, 1/4 and 1/2 in
 Balls.....8¢10¢
 American 3-Ply Hemp, 1 in Balls.....9¢10¢
 American 3-Ply Hemp, 1 in Balls (Spring
 Twine).....10¢11¢
 India 2-Ply Hemp, 1/4 and 1/2 in Balls
 (Spring Twine).....8¢
 India 3-Ply Hemp, 1 in Balls.....8¢
 India 3-Ply Hemp, 1 1/2 in Balls.....7¢1/2¢
 2, 3, 4 and 5-Ply Jute, 1/2 in Balls.....45¢
 Mason Line Linen, 1/2 in Balls.....45¢
 No. 264 Mattress, 1/4 and 1/2 in Balls.....34¢
 Wool.....5¢5 1/2¢

Vises—
 Solid Box.....70¢70¢55¢

Parallel—
 Bonney's.....50¢55¢
 Fisher & Norris Double Screw.....15¢10¢
 Hollands'.....40¢40¢10¢
 Merrill's.....25¢
 Miller's Falls.....45¢10¢
 Parker's.....20¢25¢
 Parker's Oval Slide.....50¢10¢
 Parker's Victor.....30¢
 Prentiss.....20¢25¢
 Sargent's.....70¢10¢70¢10¢10¢
 Simpson's Adjustable.....25¢30¢
 Stephens'.....25¢
 Toles' Woodworking.....25¢
 Trenton.....40¢5¢40¢10¢

Saw Filers—
 Bonney's, Nos. 2 & 3, \$15.00.....50¢10¢
 Cincinnati.....25¢10¢
 Reading.....40¢10¢
 Stearns' Common, Nos. 0, 1, 2 & 3.....50¢
 Stearns' Rubber Jaw, Nos. 10 & 33, 33¢4¢
 Wentworth's Rubber Jaw, Nos. 1, 2
 and 3.....40¢

Miscellaneous—
 Bignall & Keeler Combination Pipe
 Vise.....80¢55¢
 Parker's Combination Pipe:
 87 Series.....60¢
 187 Series.....60¢55¢
 No. 870.....40¢

Wads—Price Per M.
 U. M. C. & W. R. A.—B. E., 11 up.....60¢
 U. M. C. & W. R. A.—B. E., 9 & 10, 70¢
 U. M. C. & W. R. A.—B. E., 8.....80¢
 U. M. C. & W. R. A.—B. E., 7.....80¢
 U. M. C. & W. R. A.—P. E., 11 up.....\$1.00
 U. M. C. & W. R. A.—P. E., 9 & 10, 1.25
 U. M. C. & W. R. A.—P. E., 8.....1.50
 U. M. C. & W. R. A.—P. E., 7.....1.50
 Ely's B. E., 11 and larger.....\$1.70¢1.75
 Ely's P. E., 12 to 20.....\$3.00¢3.25

Wagon Boxes—
 See Boxes, Wagon.

Wagon Jacks—
 See Jacks, Wagon.

Ware, Hollow—
 Aluminum—
 S. S. & Co., Reduced List.....40¢

Cast Iron, Hollow—
 Stove Hollow Ware—
 Ground.....70¢70¢55¢
 Unground.....70¢70¢55¢
 White Enameled Ware—
 Maslin Kettles.....80¢80¢55¢
 Boilers and Saucepans.....65¢65¢55¢
 Tinned Boilers and Saucepans.....60¢10¢

Enameled—
 Agate and Granite Ware, list Jan. 1,
 '94, revised Jan. 3, '95.....40¢10¢
 Second Quality.....70¢10¢70¢10¢10¢
 Ironclad Enameled Ware, Old list.....70¢
 Never Break Enameled.....70¢

Kettles—
 Galvanized Tea Kettles—
 Inch... 6 7 8 9
 Each.....40¢ 45¢ 50¢ 55¢

Steel Hollow Ware.
 Avery Spiders & Griddles.....80¢
 Avery Kettles.....85¢
 Never Break Spiders and Griddles.....80¢
 Never Break Kettles.....85¢
 Solid Steel Spiders & Griddles.....75¢15¢
 Solid Steel Kettles.....60¢10¢10¢
 Solid Steel Ware, Enameled.....50¢10¢

Silver Plated Hollow—
 William Rogers Mfg. Co.....40¢10¢55¢

Washboards—
 Solid Zinc:
 Crescent, family size, bent frame, 32.75
 Red Star, laundry size, stationary
 protector.....\$4.00
 Double Zinc Surface:
 Diamond, family size, stationary
 protector.....\$2.75
 Saginaw Globe, family size, station-
 ary protector.....\$2.50
 Wilson, family size, bent frame.....\$2.50
 Single Zinc Surface:
 Nalad, protector, family size, open
 back perforated.....\$2.15
 Diamond, protector, family size,
 ventilated back.....\$2.10
 Saginaw Globe, protector, family
 size, ventilated back.....\$2.00
 Wilson, bent frame, family size,
 ventilated back.....\$2.00
 Eagle, protector, family size, venti-
 lated back.....\$1.50

Washers—	
Leather, Axle—	
Solid.....	80&10&10&85¢
Patent.....	85¢@35¢
Coil: 1 1/2 1 3/4 1 1/2 1 1/4	100.
Iron or Steel—	
Size bolt.....	5-16 3/4 1/2 3/4 1
Washers.....	\$4.50 3.25 2.50 2.30 2.20
In lots less than one keg add 1/4¢	5-16 boxes add 1/4¢ to list.
Washer Cutters—	
See Cutters, Washer.	
Washing Machines—	
See Machines, Washing.	
Water Coolers—	
See Coolers, Water.	
Weather Strips—See Strips.	
Weather.	
Wedges—	
Oil Finish.....	2.10¢
Axe Finish.....	2.45¢

Weights, Sash—	
Eastern: Carloads at factory.....	\$16@17
Less than carloads.....	\$17.00@19.00
Western: Carloads at factory.....	\$13.50@14.50
Less than carloads at factory.....	\$4.50@16.00
Well Buckets, Galvanized	
See Pails, Galvanized.	
Wheels, Well—	
8-in., \$2.00; 10-in., \$2.50; 12-in., \$3.75	
Wire and Wire Goods—	
Market: Nos. 0 to 18.....	80&10&10¢
Br. & Ann'd.....	80&10&10¢
Cop'd.....	80&10¢
Galv'd.....	80&10¢
Tin'd, Tin'd list.....	
Stone, Br. and Ann'd:	
Nos. 16 to 18.....	80&10&10¢
Nos. 19 to 23.....	80&10&10¢
Nos. 24 to 36.....	80&10&10¢
Ann'd Wire on Spools.....	80&10&10¢
Brass, list Feb. 26, '96.....	40¢
Copper, list Feb. 26, '96.....	45¢

Cast Steel Wire.....	50¢
Malin's Ann'd & Tin'd on Spools.....	40&10¢
Malin's Brass & Cop. on Spools.....	50&10¢
Steel Music Wire, 1 1/2 to 30, imported.....	60¢@70¢
Stub's Steel Wire.....	80.00 to 2, 40¢
Wire Clothes Line, see Lines.	
Wire Picture Cord, see Cord.	
Bright Wire Goods—	
Standard list.....	90&25@90&30¢
Wire Cloth and Netting—	
Galvanized Wire Netting.....	80&25@80&25¢
Painted Screen Cloth 100 ft.....	92¢@95¢
Wire Barb—See Trade Report.	
Wire, Rope—See Rope, Wire.	
Wrenches—	
Agricultural.....	80&10@80&10¢
Baxter's S.....	70¢@70&35¢
Coe's Genuine.....	40&10&5&5&3¢
Coe's "Mechanics".....	40&10&5&5&3¢
Acme.....	60¢@60&25¢
Alken's Pocket (Bright).....	\$2.00@3.20
Alligator.....	70¢@70&10¢

Bemis & Call's:	
Adjustable S.....	35&5¢
Adjustable 4 Pipe.....	40¢
Brigg's Pattern.....	30&10¢
Combination Black.....	40&10¢
Combination Bright.....	40&3¢
Cylinder or Gas Pipe.....	53¢
Extra Heavy.....	45¢
Merrick's Pattern.....	50¢
No. 3 Pipe, Bright.....	50¢
Bit Wrench, Adj., Tatum.....	\$2.25..... 25&10¢
Boardman's.....	70¢@70&10¢
Bull Dog, W. & B.....	70¢@70&10¢
Cincinnati Brace Wrenches.....	25&10¢
Donohue's Engineer.....	40&10¢
Eagle.....	50&10¢
Hercules.....	70&10¢@75¢
Stevenson.....	60&10&10¢
Tatum's Brace Socket.....	40¢
W. & B. Machinists' Knife H.....	50&10¢@70&10¢
W. & B. All Steel Pipe.....	50&10¢@60¢
W. & B. Drop Forged Engineers.....	35¢@40&10¢
Wrought Goods—	
Staples, Hooks, &c., list March 17, '92.....	90&3¢@90&10¢
Yokes, Ox, and Ox Bows—	
Fort Madison's Farmers' & Freighters.....	20¢

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.	
Lead, Foreign white, in Oil.....	8 @ 8 1/2
Lead, American White, in Oil:	
Lots of 500 lb or over.....	5 1/4 @ 5 1/2
Lots less than 500 lb.....	5 @ 5 1/4
Lead, White, in oil, 25 lb tin	
pails, add to keg price.....	1/4
Lead, White, in oil, 12 1/2 lb tin	
pails, add to keg price.....	1
Lead, White, in oil, 1 to 5 lb as-	
sorted tins, add to keg price.....	1 1/4
Lead, White, Dry in bbls.....	5
Lead, American, Terms: On lots of 500	
lbs. and over, 60 days, or 2% for cash if	
paid in 15 days from date of invoice.	
Zinc, American, dry.....	3 1/4 @ 4 1/4
Zinc, French, S. & B. Red Seal.....	7 1/2
Zinc, French, S. & B. Green Seal.....	7 1/2
Zinc, Paris, Red Seal.....	8 1/4
Zinc, Paris, Green Seal.....	9 1/4
Zinc, Antwerp, Red Seal.....	7 1/2
Zinc, Antwerp, Green Seal.....	8 1/2
Zinc, V. M. in Poppy Oil, G. Seal	
lots of 1 ton and over.....	10 1/4
lots less than 1 ton.....	10 1/2
Zinc, V. M. in Poppy Oil, Red Seal,	
lots of 1 ton and over.....	9 1/4
lots less than 1 ton.....	9 1/2
Discounts.—V. M. French Zinc.—Dis-	
counts to buyers of 10 bbl. lots of one or	
assorted grades, 1%: 25 bbls., 2%: 50 bbls.,	
4%: No discount allowed on less than 10	
bbl. lots.	
Dry Colors.	
Black, Carbon.....	5 @ 40
Black, Drop, Amer.....	2 1/4 @ 5
Black, Drop, Eng.....	5 @ 10
Black, Ivory.....	10 @ 20
Blue, Celestial.....	6 @ 8
Blue, Chinese.....	30 @ 35
Blue, Prussian.....	28 @ 32
Blue, Ultramarine.....	6 @ 30
Brown, Spanish.....	1 1/4 @ 1
Brown, Vandyke, Amer.....	1 1/4 @ 2 1/4
Brown, Vandyke, Foreign.....	1 1/4 @ 2 1/4
Carmine, No. 40, in bulk.....	\$2.20 @ 2.25
Carmine, No. 40, in 1 lb bottles.....	2.35 @
Carmine, No. 40, in ounce bot. 3.50 @ 3.60	
Green, Chrome, ordinary.....	10 @ 10
Green, Chrome, pure.....	18 @ 24
Lead, Red, bbls. and 1/2 bbls.....	5 1/4
Lead, Red, kegs.....	5 1/4
Litharge, bbls. and 1/2 bbls.....	5 1/4
Litharge, kegs.....	5 1/4
Ocher, French Washed.....	1 @ 1 1/4
Ocher, German Washed.....	4 @ 5
Ocher, American.....	\$ 8.00 @ 17.00
Orange Mineral, English.....	8 1/4 @ 9 1/4
Orange Mineral, French.....	10 @ 10 1/2
Orange Mineral, German.....	8 1/4 @ 8 1/2
Orange Mineral, American.....	7 1/2 @ 7 3/4
Red, Indian, English.....	4 1/4 @ 8 1/2
Red, Indian, American.....	2 1/4 @ 3
Red, Turkey.....	4 1/4 @ 8
Red, Venetian, Amer.....	\$ 100 @ 60
Red, Venetian, English.....	\$ 1.05 @ 2.00
Sienna, Italian, Burnt and	
Powdered.....	4 @ 9 1/4
Sienna, Ital. Raw, Powd.....	3 1/4 @ 7
Sienna, American, Raw.....	1 1/4 @ 1 1/2
Sienna, American, Burnt and	
Powdered.....	1 1/4 @ 1 1/2
Talc, French.....	\$ 100 @ 1.50
Talc, American.....	90 @ 1.50
Terra Alba, French.....	100 @ 90
Terra Alba, English.....	75 @ 80
Terra Alba, American No. 1.....	5 @ 75
Terra Alba, American No. 2.....	45 @ 50
Umber, Turkey, Bat. & Pow.....	2 1/4 @ 3
Umber, Turkey, Raw & Powd.....	2 1/4 @ 3
Umber, Bat. Amer.....	1 1/4 @ 1 1/2
Umber, Raw, Amer.....	1 1/4 @ 1 1/2
Yellow, Chrome.....	10 @ 25
Vermilion, American Lead.....	10 @ 10
Vermilion, Quicksilver, bbls.	
or kegs.....	50 @
Vermilion, Quicksilver, bags.....	50 @
Vermilion, Quicksilver, sm'p pks.....	65 @
Vermilion, English, imp't.....	75 @
Vermilion, Artificial.....	5 @ 20
Vermilion Chinese.....	70 @ 75
Colors in Oil.	
Black, Lampblack, Best.....	10 @ 13
Black, Lampblack, Common.....	7 @ 9
Blue, Chinese.....	35 @ 40
Blue, Prussian.....	25 @ 35
Blue, Ultramarine.....	16 @ 20
Brown, Vandyke.....	7 @ 12
Green, Chrome.....	17 @ 22
Sienna, Raw.....	7 @ 10
Sienna, Burnt.....	7 @ 10
Umber, Burnt.....	6 @ 10
Umber, Raw.....	7 @ 10
Miscellaneous.	
Barytes, Foreign, 1/2 ton.....	\$20.00 @ 23.00
Barytes, Amer, floated.....	18.00 @ 20.00
Barytes, Crude.....	8.00 @ 10.00
Chalk, in bulk.....	2.00 @
Chalk, in bbls.....	100 @ 35
China Clay, English.....	10.00 @ 17.50
Cobalt, Oxide.....	100 @ 1.75
Whiting, Common.....	100 @ 30
Whiting, Gilders.....	40 @ 45
Whiting, extra Gilders.....	55 @
Putty.	
In barrels and 1/2 bbls.....	14-10 @ 1 1/2
In tubs.....	1 1/2 @ 1 1/2
In tins.....	1 1/2 @ 2
In bladders.....	1 1/2 @ 2
Spirits Turpentine.	
In Southern bbls.....	42 1/4 @
In machine bbls.....	43 @
Glue.	
Low Grade.....	7 @ 9
Cabinet.....	11 @ 15
Medium White.....	10 @ 15
Extra White.....	15 @ 25
French.....	10 @ 25
Irish.....	10 @ 12 1/2
Animal Fish and Vege-	
table Oils.	
Linseed, City, raw.....	\$ gal. 41 @ 42
Linseed, City, boiled.....	43 @ 44
Linseed, Western, raw.....	41 @ 41
Linseed raw Calcutta seed.....	44 @ 44
Lard, Prime City, present make.....	44 @ 44
Lard, City, Extra No. 1.....	35 @ 37
Lard, City, No. 1.....	29 @ 31
Cotton-seed, Crude.....	17 @ 19
Cotton-seed, Summer Yellow,	
prime.....	23 @ 23 1/4
Cotton-seed Summer Yellow,	
off grades.....	21 @ 22
Sperm, Crude.....	55 @ 55
Sperm, Natural Spring.....	57 @ 59
Sperm, Bleached Spring.....	61 @ 63
Sperm, Natural Winter.....	62 @ 62
Sperm, Bleached Winter.....	65 @ 65
Whale, Crude.....	40 @ 40
Whale, Natural Winter.....	48 @ 48
Whale, Bleached Winter.....	50 @ 50
Whale, Extra Bleached Win.....	53 @ 53
Menhaden, Crude, Sound.....	23 @ 23
Menhaden, Light Pressed.....	27 @ 28
Menhaden, Bleached Winter.....	30 @ 30
Menhaden, Extra Bleached.....	34 @ 34
Tallow, Western, prime.....	40 @ 41
Cocconut, Ceylon.....	6 @ 6 1/2
Cocconut, Cochin.....	6 @ 6 1/2
Cod, Domestic.....	35 @ 35
Cod, Newfoundland.....	34 @ 34
Red Elaine.....	28 @ 30
Red Saponified.....	31 @ 31 1/2
Bank.....	26 @ 26
Straits.....	50 @ 50
Olive, Italian, bbls.....	50 @ 52
Neatsfoot, prime.....	40 @ 42
Palm, prime, Lagos.....	5 @ 5 1/4
Mineral Oils.	
Black, 29 gravity, 25 @ 30 cold	
test.....	\$ gal. 7 1/4 @ 7 1/4
Black, 29 gravity, 15 cold test.....	8 1/4 @ 8 1/4
Black, summer.....	7 @ 7
Cylinder, light filtered.....	15 1/4 @ 15 1/4
Cylinder, dark filtered.....	16 @ 16
Paraffine, 23 @ 24 gravity.....	9 1/4 @ 9 1/4
Paraffine, 25 gravity.....	8 1/4 @ 8 1/4
Paraffine, 28 gravity.....	7 1/4 @ 7 1/4
Paraffine, red, No. 1.....	9 @ 9
In small lots 1/4¢ advance.	

THE IRON AGE.

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